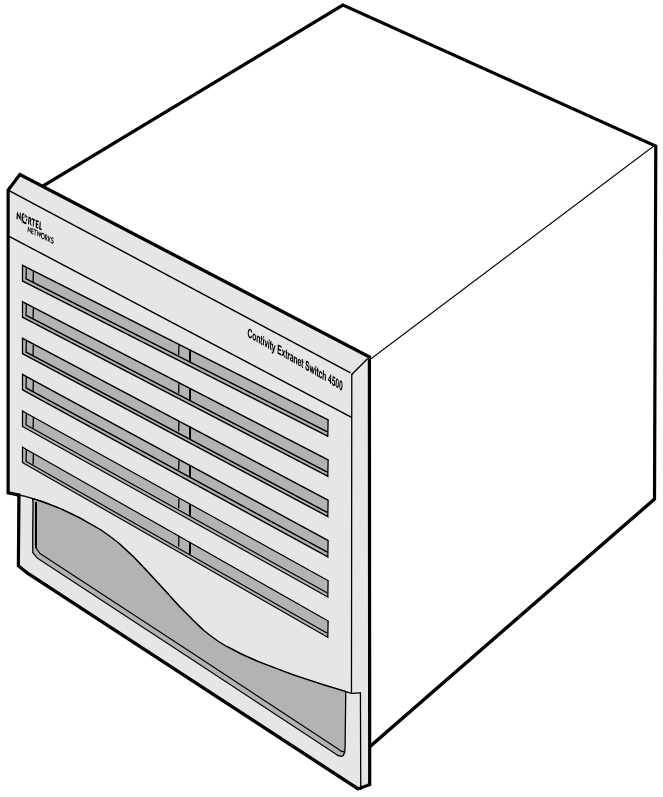
Getting Started with the Contivity Extranet Switch 4500



Part No. 306011-C Rev 00
February 2000

NORTEL NETWORKS

Accuracy Notice

The products and specifications, configurations, and other technical information regarding the products contained in this document are subject to change without notice. All statements, technical information, and recommendations contained in this document are believed to be accurate and reliable but are presented without warranty of any kind, expressed or implied, and users take full responsibility for their application of any products specified in this document.

Copyright © 2000 Nortel Networks

All rights reserved. Printed in the USA. February 2000.
The information in this document is subject to change without notice. The statements, configurations, technical data, and recommendations in this document are believed to be accurate and reliable, but are presented without express or implied warranty. Users must take full responsibility for their applications of any products specified in this document. The information in this document is proprietary to Nortel Networks, Inc.
The software described in this document is furnished under a license agreement and may only be used in accordance with the terms of that license. A summary of the Software License is in Appendix B.

Trademarks

Nortel Networks, Nortel Networks Contivity Extranet Switch 4500, Contivity, and the Nortel Networks logo are trademarks of Nortel Networks, Inc.

Microsoft, Windows 95, Windows 98, and Windows NT are registered trademarks of Microsoft Corporation.

The Microsoft Internet Explorer logo is a trademark or registered trademark of Microsoft Corporation in the United States and/or other countries.

This product contains RSA Software.

This product incorporates MPPC™ compression from Hi/fn®.
All other trademarks and registered trademarks are the property of their respective owners.

Restricted Rights Legend

Use, duplication, or disclosure by the United States Government is subject to restrictions as set forth in subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause at DFARS 252.227-7013.

Notwithstanding any other license agreement that may pertain to, or accompany the delivery of, this computer software, the rights of the United States Government regarding its use, reproduction, and disclosure are as set forth in the Commercial Computer Software-Restricted Rights clause at FAR 52.227-19.

Contents

Preface

Conventions viii
Documentation viii
Text ix
User Interface ix
Related Publications x
Nortel Networks Technical Publications xi
Nortel Networks Customer Service xii

Chapter 1
Introducing the Contivity Extranet Switch

The Switch 1-1
Components List 1-4

Chapter 2
Cabling the Switch

Connecting the Cables 2-2
Power Cord Requirements 2-3
Current Rating 2-3
Wall Outlet Connector 2-3
Power Supply Connector 2-3
Cord Length and Flexibility 2-3
LAN Interface Connections 2-4
LAN Speed Selection 2-4
Connector Pinouts 2-4
Dual V.35 WAN Interface (Optional) 2-5
Single V.35 WAN Interface (Optional) 2-7
T1 CSU/DSU WAN Interface (Optional) 2-9
T3 Interface (Optional) 2-10
Hardware Accelerator Encryption Card 2-12

Serial Interface Cable (Optional) 2-13
Understanding the LEDs 2-14
Power-On, Power-Off Sequences 2-18

Chapter 3
Assigning a System Identity

Startup Configuration Requirements 3-2
Management IP Address 3-2
Subnet Mask 3-2
Default Gateway 3-2
IP Address Configuration Utility 3-3
Requirements 3-3
Running the IP Configuration Utility 3-3
Serial Interface Configuration 3-6
Prerequisites 3-6
Procedure 3-7

Chapter 4
Managing the Switch

Recommended Web Browser Versions and Settings 4-1
Platforms Supported 4-1
Browser Versions 4-1
Display Setting 4-1
Preparing for Configuration 4-2
Extranet Switch Welcome Display 4-3
Quick Start 4-5
Guided Config 4-5
Manage Switch 4-5
Manage from Notebook 4-5
Register Online 4-6
Logging in and Supplying a Password 4-6
Quick Start Configuration Prerequisites 4-7
Required Environment 4-8
Prerequisites 4-9
Postconfiguration Testing 4-9

Configuration 4-10
LAN/WAN Interfaces 4-11
PPTP Users 4-12
Administrator 4-13
Date and Time 4-14
Automatic Backup 4-14

Chapter 5
Extranet Access Client Installation

Windows 95 5-1
Windows 98 and Windows NT 4.0 5-3

Chapter 6
Rack Mounting

Mounting Brackets 6-2
Rack-Mount Installation Procedure 6-3

Chapter 7
Changing Hardware Configurations

System Board 7-2
Installing Option Cards 7-3
Installing Additional DIMMs 7-5
Memory Options 7-6
Removing the Front Bezel 7-7
Replacing a Power Supply 7-9
Installing a Hard Disk Drive 7-11

Appendix A
Specifications

Physical Specifications and Operating Environment A-1

Appendix B
Special Notices

Preface

This guide takes you through the necessary tasks to get your Nortel Networks™ Contivity Extranet Switch 4500™ up and running. Topics include:

- Introducing the Contivity Extranet Switch
- Preparing Your Site
- Assigning a System Identity
- Managing the Switch
- Installing the Extranet Access Client
- Rack Mounting
- Changing Hardware Configurations

Complete details for configuring and monitoring the Switch are in *Managing the Contivity Extranet Switch.*

Warning: The Contivity Extranet Switch 4500 weighs about 60 pounds and should always be carried by two people.

Conventions

This guide refers to the Contivity Extranet Switch as the CES or the Switch. It assumes that you are familiar with Web browsers and their general operation.

Documentation

This document uses the following conventions to distinguish among notes of varying importance:

Note: *Take notice*. Notes contain helpful suggestions or references to materials contained in this document.

TIP: *Good idea*. A Tip is something that might be considered a good idea, whether for security reasons or because it will save you time or effort.

IMPORTANT: *Take particular notice*. Important references contain concepts or information that has bearing on other fields or situations (i.e., what you do here affects other fields or options elsewhere).

CAUTION: *Be careful*. In this situation, you might do something that could result in damage to the equipment or loss of data.

WARNING: *Danger*. You are in a situation that could cause bodily injury. Before working on equipment, beware of the hazards involved with electrical circuitry and standard practices for preventing accidents, such as disconnecting equipment from its power source.

Text

This guide uses the following text conventions:

italic text	Indicates new terms and book titles.

`screen text`	Indicates system output, for example, prompts and system messages.
	`Example:`
	`Set Nortel Networks Trap Monitor Filters`

arrow (→)	Shows menu paths. Example: Services → Available identifies the Switch services that are available.

User Interface

Help Button

Click the Help button that is located in the upper right of displays to learn about fields on a given page. Where appropriate, the information provides cause and effect of an action; otherwise, it might offer troubleshooting steps.

Related Publications

The following table lists the associated documentation that you will need to configure and manage your Switch and describes the document's objectives.

Related Publications

Document	Objective
Contivity Extranet Switch Release Notes	Provides the latest information, including known problems, workarounds, and special considerations.
Managing the Contivity Extranet Switch (included on the CD)	Provides complete details to configure, monitor, and troubleshoot your Switch.

Nortel Networks Technical Publications

You can print Nortel Networks technical manuals and release notes free, directly from the Internet. Go to *support.baynetworks.com/library/tpubs/*. Find the Nortel Networks product for which you need documentation. Then locate the specific category and model or version for your hardware or software product. Using Adobe Acrobat Reader, you can open the manuals and release notes, search for the sections you need, and print them on most standard printers. You can download Acrobat Reader free from the Adobe Systems Web site, *www.adobe.com*.

You can purchase Nortel Networks documentation sets, CDs, and selected technical publications through the Nortel Networks Collateral Catalog. The catalog is located at *support.baynetworks.com/catalog.html*:

- The “CD ROMs” section lists available CDs.
- The “Guides/Books” section lists books on technical topics.
- The “Technical Manuals” section lists available printed documentation sets.

Make a note of the part numbers and prices of the items that you want to order. Use the “Marketing Collateral Catalog description” link to place an order and to print the order form.

Nortel Networks Customer Service

If you purchased a service contract for your Nortel Networks product from a distributor or authorized reseller, contact the technical support staff for that distributor or reseller for assistance.

If you purchased a Nortel Networks service program, contact one of the following Nortel Networks Technical Solutions Centers:

Technical Solutions Center	Telephone Number
United States and Canada	800-2LANWAN (800-252-6926); enter Express Routing Code (ERC): 176#
Valbonne, France	33-4-92-96-69-68
Sydney, Australia	61-2-9927-8800
Tokyo, Japan	81-3-5402-7041

Chapter 1
Introducing the Contivity Extranet Switch

The Switch

The Nortel Networks Contivity Extranet Switch 4500 provides scalable, secure, manageable extranet access for up to 5000 simultaneous users across the Public Data Network (PDN).

The Switch's features include the most popular tunneling protocols, IP Security (IPsec), Point-to-Point Tunneling Protocol (PPTP), Layer 2 Forwarding Tunneling Protocol (L2TP), and Layer 2 Forwarding (L2F). IPsec uses digital certificates, password-based keys, and tokens for authentication; PPTP, L2TP, and L2F use Challenge Handshake Authentication Protocol (CHAP) or Password Authentication Protocol (PAP) for authentication. The PPTP and L2TP implementations for the Switch support MS-CHAP authentication with 56- to 128-bit key encryption.

Figure 1-1 shows an intranet and an extranet.

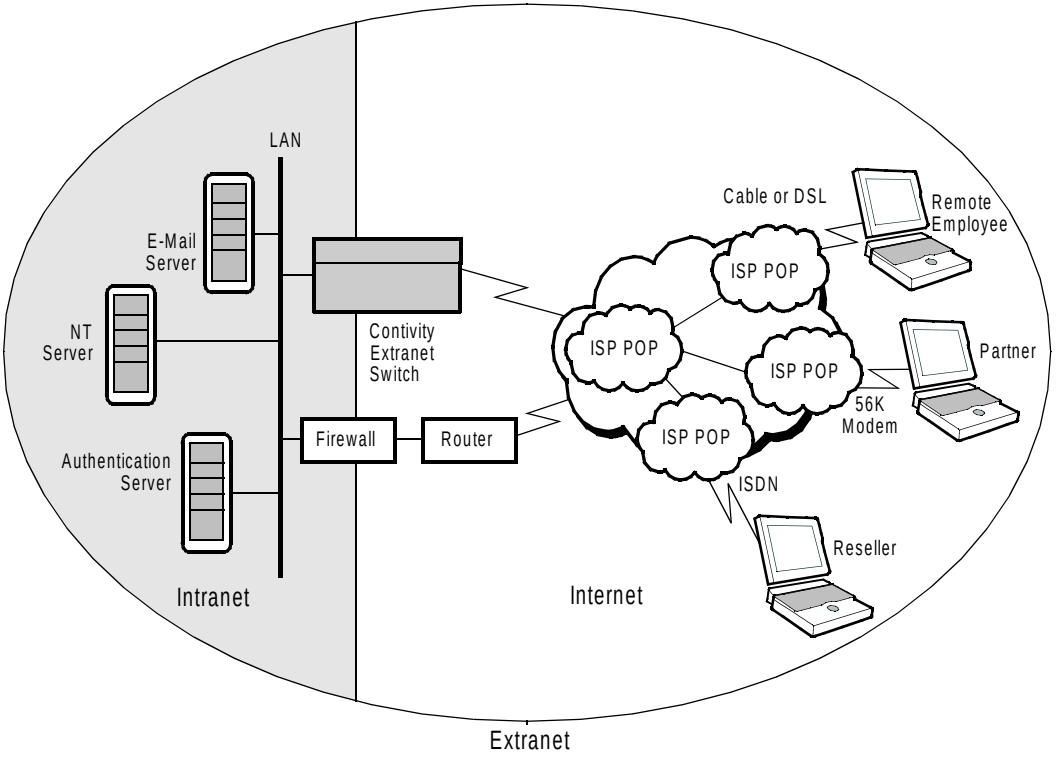


Figure 1-1. An Intranet and the Internet Make Up an Extranet

The Switch provides more security than traditional remote access schemes due to the combination of authorization, authentication, privacy, and access control on a per user basis. Additionally, the IPsec protocol and related Internet Security Association & Key Management Protocol (ISAKMP) and the Oakley key establishment protocol support further enhance the security offering.

For authentication and access control, the Switch supports an internal or external Lightweight Directory Access Protocol (LDAP) server, and external Remote Authentication Dial-In User Service (RADIUS) servers.

To restrict access, the Switch uses packet filtering based on Protocol ID, Direction, Source and Destination IP addresses, Source and Destination Ports, and TCP connection establishment.

The unique quality of service (QoS) mechanisms include call admission and packet forwarding priorities, and support for Resource ReSerVation Protocol (RSVP).

The HTML and Java Web management interface allows different Switch administrators to have different access rights, including configuration, status, and monitoring. The Switch offers RADIUS accounting support and extensive logging, including events, system, configuration, and security logs.

Figure 1-2 shows a front view of the Switch.

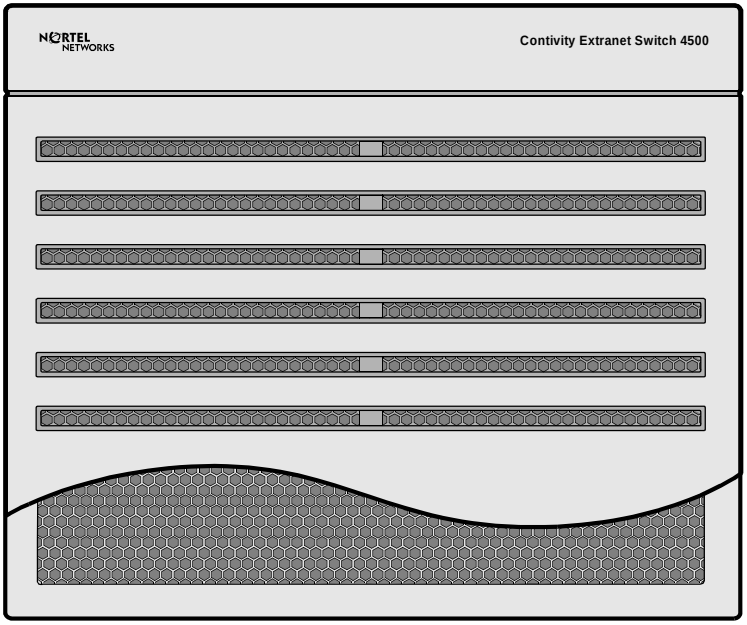


Figure 1-2. The Contivity Extranet Switch 4500, Front View

Components List

The following table lists all of the components and accessories of the Contivity Extranet Switch 4500.

Table 1-1. Contivity Extranet Switch 4500 Components

Description	Quantity
Extranet Switch 4500	1
Power Cords (optional, ordered separately)	0
Molded Serial Cable DB9/DB25-to-DB9/DB25	1
Contivity Extranet Switch CD-ROM	1
Recovery Diskette	1
IP Address Configuration Utility Diskette	1
Getting Started Guide (this book)	1
Release notes	1
Vertical Rack Mounting Brackets and Hardware	2
Horizontal Rack Mounting Brackets and Hardware	2

If for any reason you have not received all of the materials listed above, contact Nortel Networks Customer Service.

Chapter 2
Cabling the Switch

This chapter provides the following information:

- Connecting power
- WAN/LAN connections to:
  - 10/100BASE-TX LAN Interface
  - Dual V.35 Interface
  - Single V.35 Interface
  - T1 CSU/DSU Interface
  - T3 Interface
  - Hardware Accelerator/Encryption Card
- Serial interface connection
- Understanding the LEDs
- Power-On, Power-Off Sequences

This chapter describes the cables that you must use with the Switch, including pinouts for both LAN and WAN connections. Additionally, illustrations show the power connectors, the serial connector, and the LAN connector.The LAN/WAN port and 10/100BASE-TX LAN interface card LEDs are illustrated, and accompanying tables describe the LED status indicators.

Connecting the Cables

1. Connect the power cords to the back of the Switch and to the electrical outlet.
2. Connect the 10/100BASE-TX LAN RJ-45 connector to the Switch.
3. Optionally, connect the LAN or WAN card cables.

Figure 2-1 shows the back view of the Switch.

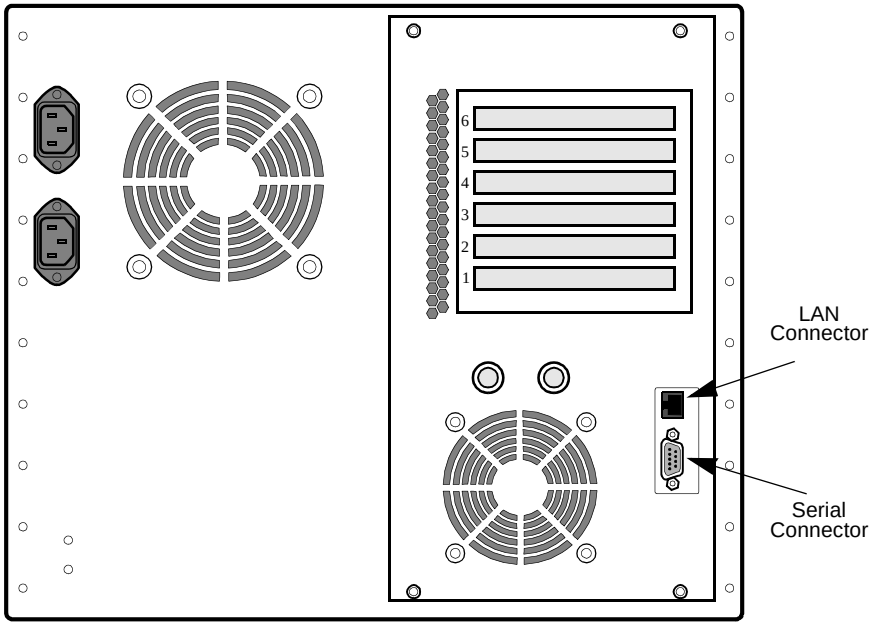


Figure 2-1. Extranet Switch 4500 Back View

Power Cord Requirements

WARNING:

1. Do not modify or use the AC power cord(s) if it is not the exact type that is required for your power outlet.
2. Connect the LAN/WAN and serial port cables before you plug the Switch's power cord into the outlet.

CAUTION: You should protect your Switch by plugging it into a surge suppressor. For power source redundancy, connect one power cord to a backup power supply, and the other power cord into the main power supply.

Current Rating

The power cord(s) must be rated for the available AC voltage, and must have a current rating that is at least 125 percent of the Switch's current rating (refer to Appendix A).

Wall Outlet Connector

The power cords must terminate in a male plug with appropriate grounding. The power cords must have certification marks from an acceptable regional agency.

Power Supply Connector

The connector that you plug into the Switch power supply AC receptacle must be an IEC 320, Sheet C13, female.

Cord Length and Flexibility

The power cords must be less than 4.5 meters (14.7 feet) long, and it must be a flexible HAR (harmonized) cord or VDE-certified cordage to comply with the Switch's safety certifications.

LAN Interface Connections

At least one LAN interface connection is for Web management.

100BASE-TX connections require Category 5, twisted-pair wire. The 100BASE-TX specification supports 100 Mb/s transmission over two pairs of Category 5 twisted-pair Ethernet wiring; one pair each for transmit and receive operations.

The maximum recommended cable segment length is 100 meters between a 100BASE-TX repeater and a workstation (due to signal timing requirements). This wiring scheme complies with the EIA 568 wiring standard.

10BASE-T connections can use Category 3, 4, or 5 twisted-pair wiring.

LAN Speed Selection

The Switch automatically determines the speed of the LAN connection during startup. To change the speed, turn off the unit, connect to the desired LAN, and restart the unit.

Connector Pinouts

The LAN connectors on the Switch are RJ-45 straight-through. The following illustration shows the Switch connector's 10/100BASE-TX pinouts.

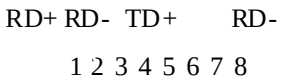


Figure 2-2. 10/100BASE-TX Pinouts

Dual V.35 WAN Interface (Optional)

The Dual V.35 WAN connectors are located on a PCI card that offers two separate DB26S connectors that provide the signals needed to interface to V.35 equipment. Included in the accessory box are two cables that map the DB26S signals to a standard V.35 connector. Figure 2-3 shows the Dual V.35 interface.

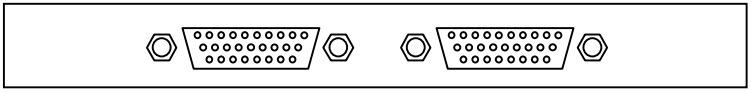


Figure 2-3. Dual V.35 WAN Interface

Table 2-1 shows the cable pinouts.

Table 2-1. DB26S-to-V.35 Cable Pinouts

DB26	Signal	V.35
1	GND	A
2	TDA	P
3	RDA	R
4	RTS	C
5	CTS	D
6	DSR	E
7	GND	B
8	DCD	F
9	RCB	X
11	ETB	W
12	TCB	AA
14	TDB	S
15	TCA	Y
16	RDB	T
17	RCA	V

20	DTR	H
24	ETA	U

Note that you will need a DSU/CSU (digital service unit/channel service unit) between the WAN connection and the Switch.

Single V.35 WAN Interface (Optional)

The Single V.35 WAN connector is located on a PCI card that offers a separate DB26S connector that provides the signals needed to interface to V.35 equipment. Included in the accessory box is a cable that maps the DB26S signals to a standard V.35 connector.

Table 2-2 shows the cable pinouts.

Table 2-2. DB26S-to-V.35 Cable Pinouts

DB26	Signal	V.35
1	Shield	A
2	TXDA	P
3	RXDA	R
4	RTSA	C
5	CTSA	D
6	DSRA	E
7	GND	B
8	DCDA	F
9	RXCB	X
10	DCDB	no conn
11	SCTEB	W
12	TXCB	AA
14	TXDB	S
15	TXCA	Y
16	RXDB	T
17	RXCA	V
18	LL	L
19	RTSB	no conn
20	DTRA	H
21	RL	N
22	DSRB	j
23	DTRB	no conn
24	SCTEA	U

25	TM	NN
26	M0<-SIGNAL GROUND	B
27	M1<-SIGNAL GROUND	B
28	M2	no conn

The following notes apply to the Single V.35 WAN Interface:

- You need a DSU/CSU (digital service unit/channel service unit) between the WAN connection and the Switch.
- At each end, Cable shield and connector shell must connect respectively to pin A of the 34-pin connector and pin 1 of the standard 28-pin connector.
- The term “no conn” means the wire is not connected to a pin in the 34-pin connector.
- Wires 12B, 13A, and 14B connect to pin B in the 34-pin connector.
- Unused pins in the 34-pin connector need not be present.
- Do not connect Shield to Signal Ground as these are separate signals.
- The pair suffix A or B refers to an individual wire within a twisted pair.

T1 CSU/DSU WAN Interface (Optional)

The T1 CSU/DSU WAN crossover cable crosses the blue pair with the orange pair. This is different from the commonly available crossover cable, which crosses the green pair with the orange pair. No cables are supplied with the T1 CSU/DSU. Table 2-3 shows the cable pinouts.

Table 2-3. T1 CSU/DSU Cable Pinouts

DB26S	Signal	T1 CSU/DSU
1	RXDA->TXDA	5
2	RXDB->TXDB	4
3	not used	3
4	TXDB<-RXDB	2
5	TXDA<-RXDA	1
6	not used	6
7	not used	7
8	not used	8

The cable will operate properly if pins 3, 6, 7, and 8 are not connected.

T3 Interface (Optional)

The Single T3 WAN connection is located on a PCI card which has a 50-pin SCSI II female connector that provides the signals needed to interface to a T3 modem or Modem Eliminator. Included in the accessory box is a cable, which maps the T3 signals out to a 50-pin SCSI II male connector. Figure 2-4 shows a T3 interface.

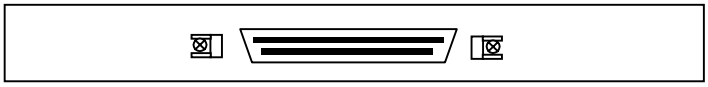


Figure 2-4. T3 Interface

Table 2-4 shows the cable pinouts.

Table 2-4. T3 Cable Pinouts

J1	Signal	J2
1	GND	1
2	RCB	2
3	CAB	3
4	RDB	4
5	LCB	5
6	STB	6
7	GND	7
8	TAB	8
9	TTB	9
10	LAB	10
11	TDB	11
12	LBB	12
13	GND	13
19	GND	19
24	TESTB	24
25	GND	25
26	GND	26

27	RCA	27
28	CAA	28
29	RDA	29
30	LCA	30
31	STA	31
32	GND	32
33	TAA	33
34	TTA	34
35	LAA	35
36	TDA	36
37	LBA	37
38	GND	38
44	GND	44
49	TESTA	49
50	GND	50

Hardware Accelerator Encryption Card

The Nortel Networks Hardware Accelerator Encryption card is an encryption, compression, and authentication processor card with a PCI interface. It provides high-speed processing of the compute-intensive algorithms supported by today's standard communications protocols. The card has a PCI revision 2.1-compliant interface, and contains onboard memory to store context information for all three engines.

This card adds high-speed encryption processing into a hardware system. All three processing engines on the card operate in parallel, increasing overall processing performance and reducing bus bandwidth issues. The Nortel Networks Hardware Accelerator Encryption card benefits include:

- PCI interface allows for easy integration into a system with PCI card slots
- Onboard memory stores state (key) information for all three processing engines
- Simultaneous multiple session support -- can store key information for up to 2048 sessions

Algorithms Supported:

- Encryption: DES, 3DES, RC4
- Encryption Modes: ECB, CBC, CFB, and OFB
- Compression: LZS and MPPC
- Authentication: SHA-1 and MD5

Protocols Supported:

- IPSec (ESP): DES, 3DES, SHA-1, MD5, LZS
- IPSec (AH): SHA-1, MD5, LZS
- PPTP: RC4, MPPC
- SSL: DES, 3DES, RC4
- PP: CCP with LZS, ECP with DES, 3DES
- L2TP: With IPSec encapsulation

Serial Interface Cable (Optional)

Nortel Networks ships a serial cable with the Switch. Optionally, you can provide the Switch with a Management IP Address, subnet mask, and default gateway address among other things via the Serial Interface (refer to page 3-6 for details). Nortel Networks, however, recommends that you use the IP Address Configuration Utility diskette for easy initial IP address configuration (refer to page 3-3 for details). Later, you can use the serial interface configuration menu to perform management functions that you might need if problems were to arise.

The serial cable provided with the Switch is a DB9/DB25-to-DB9/DB25. This provides a crossover (transmit-to-receive and receive-to-transmit). The DB9 connector goes into the Switch and the other DB9 or DB25 connector goes into your workstation. You should ignore the extra DB25 connection that is attached to the Switch. Table 2-5 shows the multiple cable DB-9/DB25 serial interface cable pinouts.

Table 2-5. Multi-DB-9 and DB-25 Connector Pinouts

Serial Port DB-9 Connector		**Serial Port DB-25 Connector**			**Serial Port DB-25 Connector**		**Serial Port DB-9 Connector**	
Pinout	Signal	Pinout	Signal		Pinout	Signal	Pinout	Signal
2	RXD	3	TXD	>	2	RXD	3	TXD
3	TXD	2	RXD	>	3	TXD	2	RXD
4	DTR	20	DSR	>	6	DTR	6	DSR
5	Ground	7	Ground	>	7	Ground	5	Ground
6	DSR	6	DTR	>	20	DSR	4	DTR
7	RTS	4	RTS	>	5	CTS	8	CTS
8	CTS	5	CTS	>	4	RTS	7	RTS

Understanding the LEDs

The **Power LED** is green when the power is on; if it is flashing, there is a hardware failure and you should contact Nortel Networks.

The **Hard Disk LED** is green, and when it flashes the Switch is either reading or writing to the disk.

The **LAN Port LED** is green, and when it flashes the Switch is either transmitting or receiving data.

Start the Switch and confirm that the interfaces are cabled properly by examining the two LEDs located adjacent to the RJ-45 connector of the LAN port, or the LEDs located on the card panel.

Figure 2-5 shows the private LAN Port LEDs. Look at the condition of the LEDs, then examine the corresponding LED table to better understand the indications.

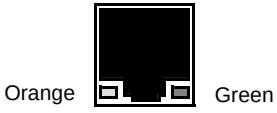


Figure 2-5. LAN Port LEDs

Table 2-6. LAN Port LED Indicators

LED	Indicator	Description
Orange	On	The cable connections between the LAN port and the hub are good.
	Off	The cable connections between the LAN port and the hub are faulty.
	Flashing	The LAN port is sending or receiving network data. The frequency of the flashes increases with increased traffic.
Green (100)	On	The LAN port is operating at 100 Mb/s.
	Off	The LAN port is operating at 10 Mb/s.

Figure 2-6 shows the Single V.35 LEDs. Look at the condition of the LEDs, then examine the corresponding LED table to better understand the indications.

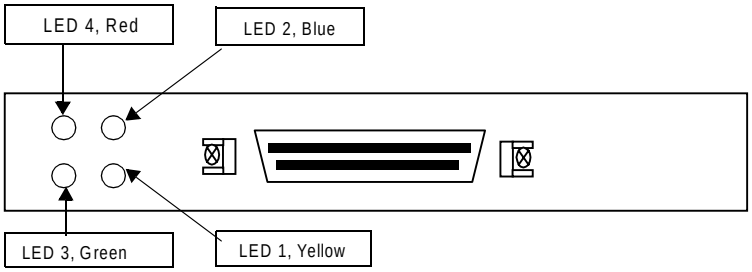


Figure 2-6. Single V.35 LEDs

Table 2-7. Single V.35 LED Indicators

LED	Description
LED1	Power is on to the adapter and the onboard microcode is loaded.
LED2	The signals CDC and DSR are on between the DSU and the adapter. LED2 detects receive link status.
LED3	Cable is detected.
LED4	No external transmit clock source is available.

Figure 2-7 shows the T1 CSU/DSU LEDs. Look at the condition of the LEDs, then examine the corresponding LED table to better understand the indications.

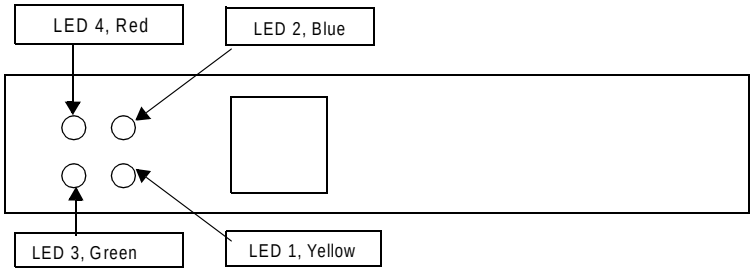


Figure 2-7. T1 CSU/DSU LEDs

Table 2-8. T1 CSU/DSU LED Indicators

LED	Description
LED1, Yellow	Yellow alarm LED is lit when the far-end equipment is in the red alarm condition.
LED2, Blue	Blue alarm LED is lit when receiving an upstream failure denoted by an alarm indication signal (AIS).
LED3, Green	Normal operation.
LED4, Red	Red alarm is lit when a loss-of-signal (LOS) or out-of-frame (OOF) condition is detected on the receive signal.

Figure 2-8 shows the PCI card 10/100BASE-TX public LAN LEDs. Look at the condition of the LEDs, then examine the corresponding LED table to better understand the indications.

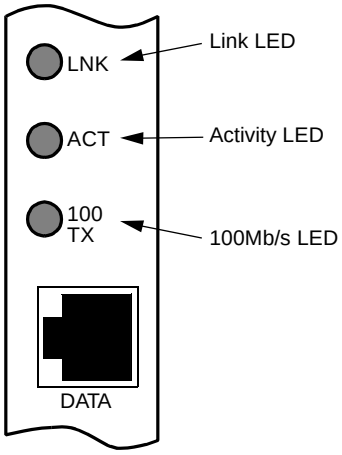


Figure 2-8. 10/100BASE-TX LAN LEDs

Table 2-9. 10/100BASE-TX LAN LED Card Indicators

LED	Indicator	Description
ACT/ LNK	On or Flashing	The card is sending or receiving network data. The frequency of the flashes increases with increased traffic.
	Off	The card is not sending or receiving data.
10/100 TX	On	Operating at 100 Mb/s.
	Off	Operating at 10 Mb/s.

Power-On, Power-Off Sequences

The following table indicates what is happening with the Switch during power-on and power-off sequences.

Table 2-10. Contivity Extranet Switch Power-on, Power-off Sequences

If the system is in this state	and the power switch is	the system does the following	Conditional effects
Off	Pressed for fewer than 4 seconds	Power On	None
On	Pressed and released	Power Off	Wait for a 3- to 5-second delay before powering off. Notes: 1. If the power switch is pressed several times the Switch will reboot, not power off. 2. If the Switch does not power down, press the power switch for 5 seconds and the Switch will shut down.

Chapter 3
Assigning a System Identity

This section describes how to assign a Management IP address, subnet mask, and optional default gateway address to your Switch. The Management IP address is used for all system services, such as HTTP, FTP, and SNMP. The Management IP address enables you to manage the Switch from a Web browser.

Table 3-1 describes the choices you have when first configuring the required Switch parameters.

The IP Address Configuration Utility diskette, which comes with your Switch, searches for the serial numbers of unconfigured Switches. It then displays a table for you to enter the Management IP address, subnet mask, and default gateway (optional).

To configure the Switch from the serial interface configuration menu, you must first connect the serial interface cable to the Switch. Then you can use a terminal emulation application to enter the Management IP address, subnet mask, and default gateway (optional).

Table 3-1. Initial Configuration Options

Initial Configuration Method	Result	Advantages/ Disadvantages
IP Address Configuration Utility (Recommended)	Sets Management IP Address, Subnet Mask, and Default Gateway (optional)	Utility diskette makes initial configuration easy
Serial Interface Configuration Menu (Optional)		Must connect the serial interface cable

Startup Configuration Requirements

This section describes the fields that you must complete with either the IP Address Configuration Utility or the serial interface configuration menu procedure.

Management IP Address

Enter a Management IP address for the system. You need this address to manage all system services, such as HTTP, FTP, and SNMP. This address must be accessible from one of the Switch's private physical interfaces. Therefore, the Management IP address must map to the same network as one of the private interfaces.

For example, if you plan to assign IP address 10.2.3.3 with Subnet Mask 255.255.0.0 to the private physical interface, then the Management IP address must reside in the 10.2 network.

Carefully record the Management IP address. Later, during the Quick Start or the Guided Configuration, you will be asked to supply IP addresses for the physical interfaces.

Subnet Mask

The Subnet Mask defines how many bits of the IP Address represent the network the device is on and how many bits represent the host’s ID on the network.

The device uses the Subnet Mask to determine which IP Addresses are directly reachable on the network and which ones must be routed through a gateway. A sample IP Address is 10.2.3.3 with a Subnet Mask of 255.255.0.0. This indicates that all hosts with addresses 10.2.*n*.*n* are directly reachable.

Default Gateway

The Default Gateway is where packets are routed onto the private or public network if there is not a specific route in the routing table to the desired location.

IP Address Configuration Utility

Use this utility for the initial Switch configuration.

Requirements

To assign the Switch a Management IP address with this utility, you need:

- A PC running Windows 95®, Windows 98®, or Windows NT® with a functioning TCP/IP stack
- The PC running on the same subnet as the Switch you are configuring
- The PC connected to an operational network connection

If your environment does not match these requirements, then you must use the serial interface configuration.

To test the function of your TCP/IP stack, send a PING command to any host.

Running the IP Configuration Utility

The program *ExtNetIP.exe* is on a diskette labeled *IP Address Configuration Utility* that accompanies the Switch. You can copy the utility to your hard disk and execute it from there, or you can load it from the diskette drive. The *ExtNetIP.exe* program launches the IP Address Configuration Utility, which allows you to assign a Management IP address and subnet mask to the Switch. To run *ExtNetIP.exe*:

1. Remove the front bezel (refer to page 7-7).
2. Insert the diskette into the A: drive and select Start→Run, and then type:

   ```
   a:\ExtNetIP.exe
   ```

   or, open the “My Computer” icon on the desktop and open the “3½ Floppy (A:)” drive, and then double-click on the icon:

The following display appears while the program searches for an unconfigured Switch.

Figure 3-1. Serial Number Search Display

3. The program automatically enters the Serial Number for the first available Switch into the table of Contivity Switches.

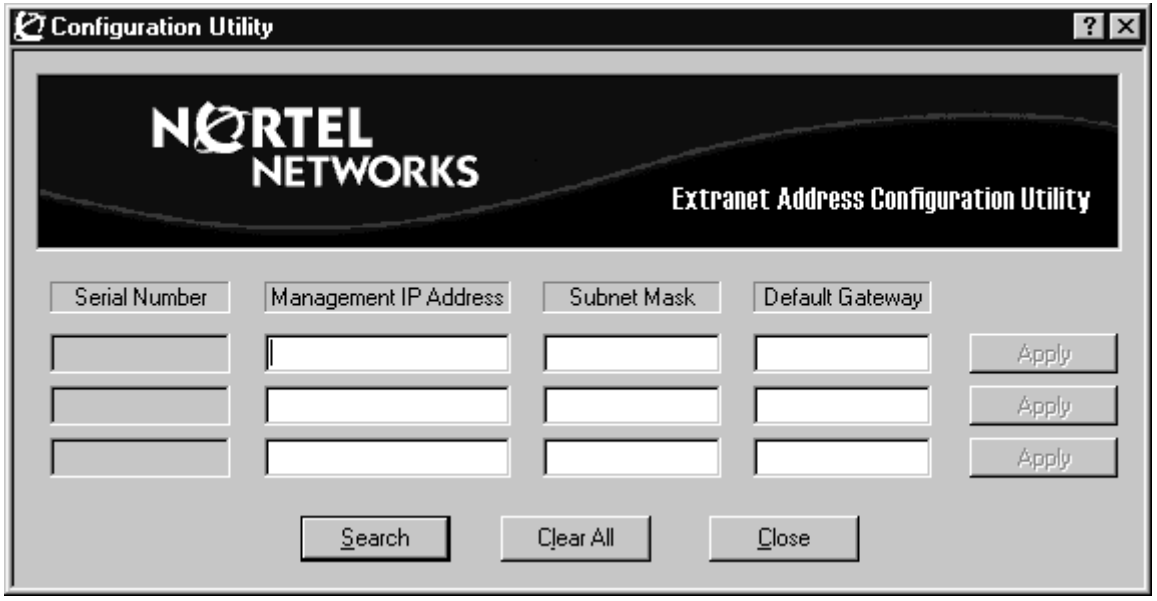


Figure 3-2. IP Address Configuration Utility Display

4. Assign a Management IP Address and Subnet Mask to the Switch; the Default Gateway address is optional and can be added later (refer to "Startup Configuration Requirements" on page 3-2 for descriptions of the required fields).

   If you have more than one Switch, click Search to automatically add the additional Switch serial numbers. To verify the switches that have been discovered, you can refer to the serial number on the bar code on the bottom of the Switch.

5. Click Apply to configure the Management IP Address, Subnet Mask, and Default Gateway on the Switch. The IP Address Configuration Utility display disappears.

   When the Switch has completed updating its configuration with the Management IP Address, Subnet Mask, and optional Default Gateway, your default Web browser will automatically open to the Contivity Extranet Switch Welcome display.

6. Click Close to shut down the IP Address Configuration Utility.

Note: Before moving the Switch from one network to another, change the Management IP address, Subnet Mask, and Default Gateway. Otherwise, you will need to follow the Serial Interface Configuration procedure to access your Switch because it will not be accessible from a Web browser with an invalid address.

Serial Interface Configuration

Note: Use the IP Address Configuration Utility (refer to page 3-3) to configure the Switch with its initial IP address.

Alternatively, you can use the serial interface configuration menu to access the Switch via the serial interface of your PC. The serial interface configuration menu allows you to give the Switch a Management IP address, Subnet Mask, and Gateway IP Address so that you can use a Web browser for management.

Prerequisites

The terminal emulator on your PC must use the following communications parameters:

- 9600 baud
- 8 data bits
- 1 stop bit
- No parity
- No flow control

Procedure

1. Connect the serial cable from the Switch's serial cable port to a PC communications port.

   Turn on the Switch. It can take the system approximately 3 minutes to start up.

2. Using a terminal emulation program, such as Hyper Terminal, press Enter and then supply a user name and password. The factory default user name and password are:

   ```
   User name: admin
   Password:  setup
   ```

   A menu appears that allows you to enter the following:

   - Management IP address
   - IP subnet mask
   - Gateway IP address (optional)

A sample display follows:

```
Main Menu:
     1) Interfaces
     2) Administrator
     3) Private Default Route Gateway*   10.0.0.10
     4) Public Default Route Gateway*
     5) Create A User Management Tunnel (IPsec)
     6) Restricted Management Mode
     7) Allow HTTP Management            TRUE
     8) Check Point Firewall Options
     9) Shutdown
     P) Configure Serial Port
     C) Controlled Crash
     R) Reset System to Factory Defaults
     E) Exit, Save and Invoke Changes

        * Type 0.0.0.0 to delete.

     Please select a menu choice (1 - 9,P,C,R,E): 1
```

Figure 3-3. Sample Serial Interface Display

3. Follow the screen prompts. Some of the descriptions of the fields required to complete this procedure are in the section "Startup Configuration Requirements" on page 3-2.

4. After you complete the configuration, type **E** to Exit. You can then manage the Switch from a Web browser.

   IMPORTANT: This Administrator's Password is also the Primary Administrator's Password. This password guarantees access to the Switch via the serial port or a Web browser.

Chapter 4
Managing the Switch

This chapter describes the recommended Web browsers and the default login and passwords you need to access the Contivity Switch and the Quick Start Configuration.

Recommended Web Browser Versions and Settings

Nortel Networks Extranet Manager uses Java, JavaScript, and HTML features. For the management interface to function properly, verify that your Web browser meets the following minimum requirements.

Platforms Supported

Windows 95, Windows 98, Windows NT, and Macintosh®.

Browser Versions

Microsoft Internet Explorer Version 4.0 or later is required.

Netscape Communicator Version 4.0 or later is required.

Display Setting

Verify that the system display color is set for 256 colors or greater.

Preparing for Configuration

To properly prepare for Installation and Configuration of the Contivity Extranet Switch, you should have the following items available:

- A Management IP Address for the system. You need this address to manage all system services, such as HTTP, FTP, and SNMP.
- An IP Address for the LAN port that is available on the system board.
- Any number of Public IP Addresses; e.g., one IP address for each Public LAN Interface.
- A plan to distribute IP addresses to clients when connections are requested; e.g., via a DHCP server or an internal client address pool (with an address pool you will need a range of IP addresses).
- An Authentication database: If you are not using internal authentication via the LDAP database, then make sure you have either the external LDAP or the RADIUS server(s) IP Address and password or Shared Secret (password).
- An external accounting server, such as RADIUS, with its IP Address and Shared Secret.
- Client dial-in: Prepare the clients for the type of tunneling protocol they will be using. The PPTP client application is available for Windows 95 on the Nortel Networks CD, and it comes with Windows 98 and Windows NT operating systems. Nortel Networks also provides the IPsec client on the Nortel Networks CD.
- A complete network topology of the “environment” in which you are testing the Switch, including the Switch, the default router address, and any other IP addresses that you think might be required.

Extranet Switch Welcome Display

The Welcome display allows you to enter any of the configuration areas for the Contivity Extranet Switch, including:

- Quick Start
- Guided Config
- Manage Switch
- Manage from Notebook

Before entering the configuration options, you should first register to activate licenses, warranties, and services.

Table 4-1 shows the alternatives you have when first configuring your Switch. Nortel Networks recommends that you begin with the Quick Start or the Guided Configuration. Once you are familiar with the Switch's navigation menu and capabilities, then you will want to select Manage Extranet Switch.

Table 4-1. Configuration Options

Configuration Type	Results
Quick Start	Configure and test a basic PPTP configuration
Guided Config	Structured Switch configuration and management
Manage Switch	Comprehensive Switch configuration and management
Manage from Notebook	Comprehensive Switch configuration and management using a compact interface designed for small displays

Following is a sample Extranet Switch Welcome display. Descriptions of each configuration option follow. A detailed checklist describes things you will need to properly configure your Switch. Then full details of the different procedures are described.

Complete details for configuring and monitoring the Switch are in the guide *Managing the Contivity Extranet Switch.*

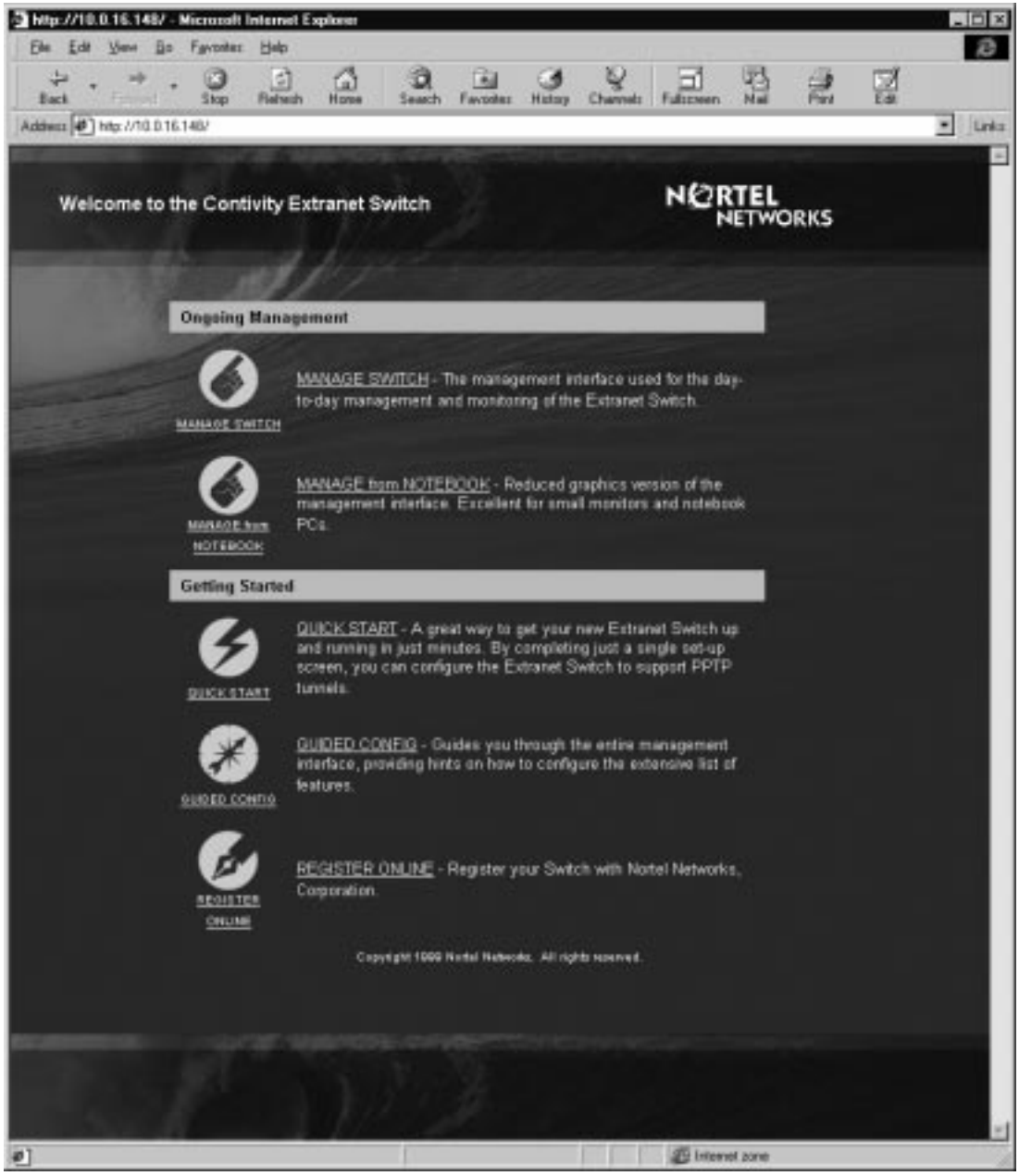

Welcome to the Contivity Extranet Switch
NORTEL NETWORKS
Ongoing Management
MANAGE SWITCH - The management interface used for the day-to-day management and monitoring of the Extranet Switch.
MANAGE SWITCH
MANAGE from NOTEBOOK - Reduced graphics version of the management interface. Excellent for small monitors and notebook PCs.
MANAGE from NOTEBOOK
Getting Started
QUICK START - A great way to get your new Extranet Switch up and running in just minutes. By completing just a single set-up screen, you can configure the Extranet Switch to support PPTP tunnels.
QUICK START
GUIDED CONFIG - Guides you through the entire management interface, providing hints on how to configure the extensive list of features.
GUIDED CONFIG
REGISTER ONLINE - Register your Switch with Nortel Networks, Corporation.
REGISTER ONLINE
Copyright 1999 Nortel Networks. All rights reserved.

Figure 4-1. Welcome Display

Quick Start

Click to begin the Quick Start configuration. This option allows you to configure interfaces, set up PPTP tunnels for up to three users, and establish a connection to the Switch. If you prepare for the configuration (refer to "Preparing for Configuration" on page 4-2), the Quick Start can take as little as 15 minutes to complete.

Guided Config

Click to begin the Guided Configuration. This option allows access to all Configuration Management facilities. However, the design and structure of the Guided Configuration is best followed using the top-to-bottom layout provided. This approach walks you through the entire Navigational Menu from the Profiles to the Admin selections.

Each functional area begins with a summary of the objectives of the area and then steps you through the area (e.g., Profiles), one subsection at a time. Online context-sensitive help is available at each subsection to supplement the summary.

Provided you have the information required to set up the Switch, the Guided Configuration can to take 2 to 3 hours to complete, depending on how extensive your configuration will be.

Manage Switch

Click to begin a standard configuration and management session. This option allows access to all configuration management facilities. Nortel Networks recommends that you follow the Quick Start or Guided Configuration for your first configuration.

Manage from Notebook

Click to activate the notebook display mode. The Contivity Extranet Switch Manager then runs in notebook display mode, which better fits notebook displays.

Register Online

Click to register the Switch with Nortel Networks. It will only take a few minutes and it will give you access to the latest software and technical tips. Your Switch requires Internet access in order to register.

Logging in and Supplying a Password

Start up a Web browser and enter your Switch's Management IP Address. Select an option in the navigational menu and submenu, and then you are prompted for the Login and Password. Enter the system default Login and Password in lowercase characters, as follows:

Login: **admin**

Password: **setup**

IMPORTANT If you change your password and later need to access the Serial Interface Configuration, you must then enter the modified password. The factory default password is no longer valid in this case.

Also, make sure you change the default Administrator's Login and Password as soon as possible (refer to the Admin→Administrator display.) You should then guard the Login and Password carefully.

Quick Start Configuration Prerequisites

This screen displays a checklist for you to prepare for the Quick Start configuration. Assembling the information beforehand, and verifying that you can establish a PPTP Client session, makes Quick Start easy.

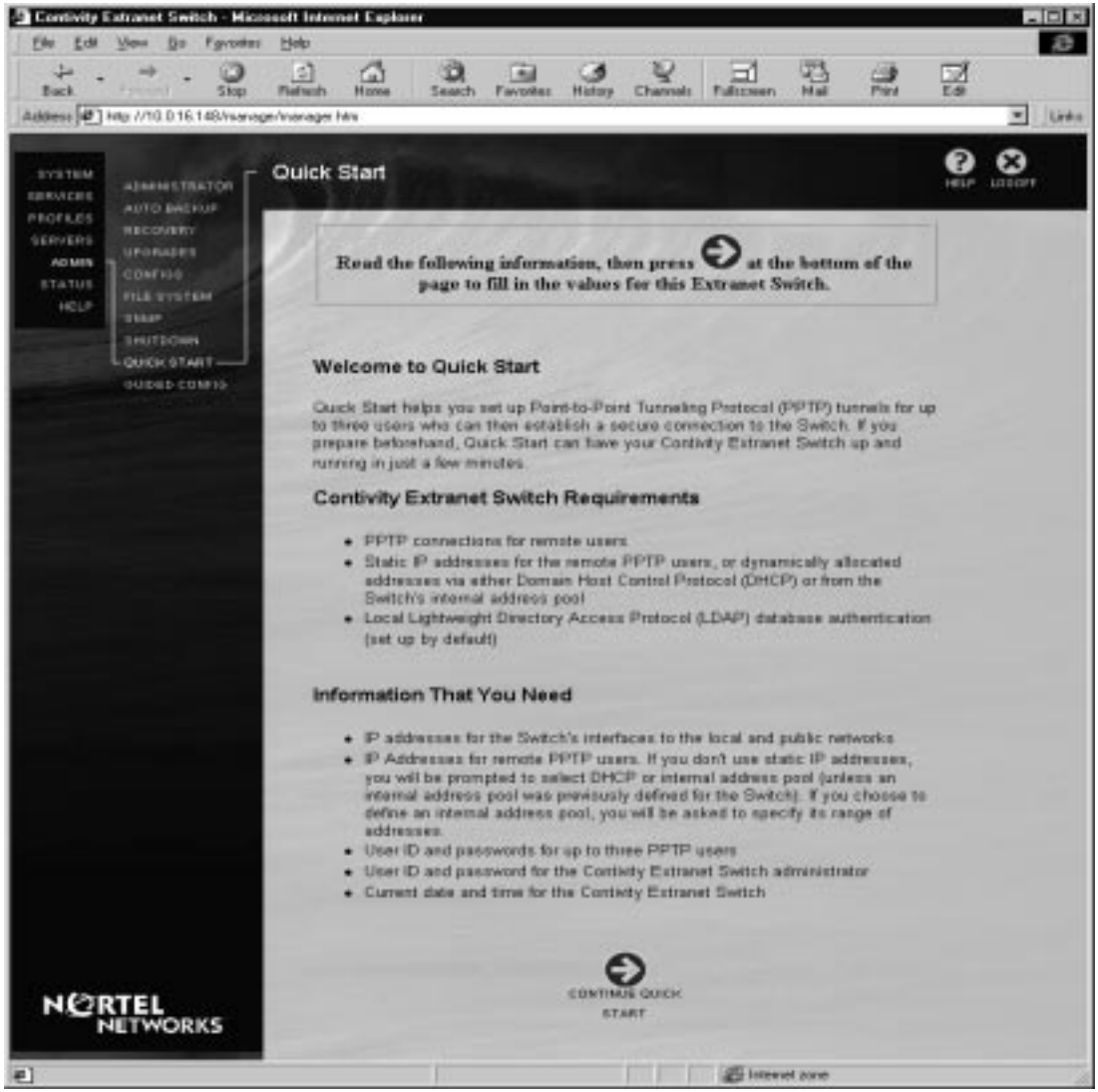

Contivity Extranet Switch - Microsoft Internet Explorer
Quick Start
Read the following information, then press at the bottom of the page to fill in the values for this Extranet Switch.
Welcome to Quick Start
Quick Start helps you set up Point-to-Point Tunneling Protocol (PPTP) tunnels for up to three users who can then establish a secure connection to the Switch. If you prepare beforehand, Quick Start can have your Contivity Extranet Switch up and running in just a few minutes.
Contivity Extranet Switch Requirements
PPTP connections for remote users
Static IP addresses for the remote PPTP users, or dynamically allocated addresses via either Domain Host Control Protocol (DHCP) or from the Switch's internal address pool
Local Lightweight Directory Access Protocol (LDAP) database authentication (set up by default)
Information That You Need
IP addresses for the Switch's interfaces to the local and public networks
IP Addresses for remote PPTP users. If you don't use static IP addresses, you will be prompted to select DHCP or internal address pool (unless an internal address pool was previously defined for the Switch). If you choose to define an internal address pool, you will be asked to specify its range of addresses.
User ID and passwords for up to three PPTP users
User ID and password for the Contivity Extranet Switch administrator
Current date and time for the Contivity Extranet Switch
CONTINUE QUICK START
NORTEL NETWORKS

Figure 4-2. Quick Start Prerequisites Display

Required Environment

This section describes the environment you need for the Quick Start configuration. If this does not describe your environment, use the Guided Configuration.

Point-to-Point Tunnel Protocol (PPTP) tunnel access method

PPTP is a tunneling protocol supported by Nortel Networks, Microsoft, and other vendors. The PPTP client is available for Windows 95 on the Nortel Networks CD and comes with Windows 98 and Windows NT 4.0 and later.

Static IP addresses, Dynamic Host Configuration Protocol (DHCP) server address allocation, or an Internal Client Address Pool

A DHCP Server on the private LAN segment dynamically assigns IP addresses on behalf of remote users. The DHCP server is automatically discovered via broadcasting on the private interface that is associated with the Management IP Address. With an Internal Client Address Pool you will need a range of IP addresses.

Local Lightweight Directory Access Protocol (LDAP) database authentication

LDAP is a standard protocol for Internet directory services that is based on directory entries. A *directory service* is a central repository of user information. The local database is internal to the Switch.

An LDAP server and associated database will be set up locally on the Switch for the Quick Start procedure. Later, you can switch to a network-available external LDAP server using the LDAP Intermediate File (LDIF) data format.

Prerequisites

- IP configuration information (refer to "Preparing for Configuration" on page 4-2 for additional information).
  - Management IP Address for the Switch
  - Subnet Mask for the local subnet
- User IDs and Passwords
  - PPTP Users (up to three)
  - Administrator

Postconfiguration Testing

- A PPTP remote user dialing in from an external system.

Refer to the guide *Managing the Contivity Extranet Switch*, the Switch's online help, and the Microsoft PPTP documentation for additional information.

Configuration

This display allows you to add a LAN port IP Address and Subnet Mask, establish the tunnel as Private (your private LAN) or Public (public data networks), and configure up to three PPTP Users and an Administrator with User IDs and Passwords. Additionally, you can set the system's Date and Time.

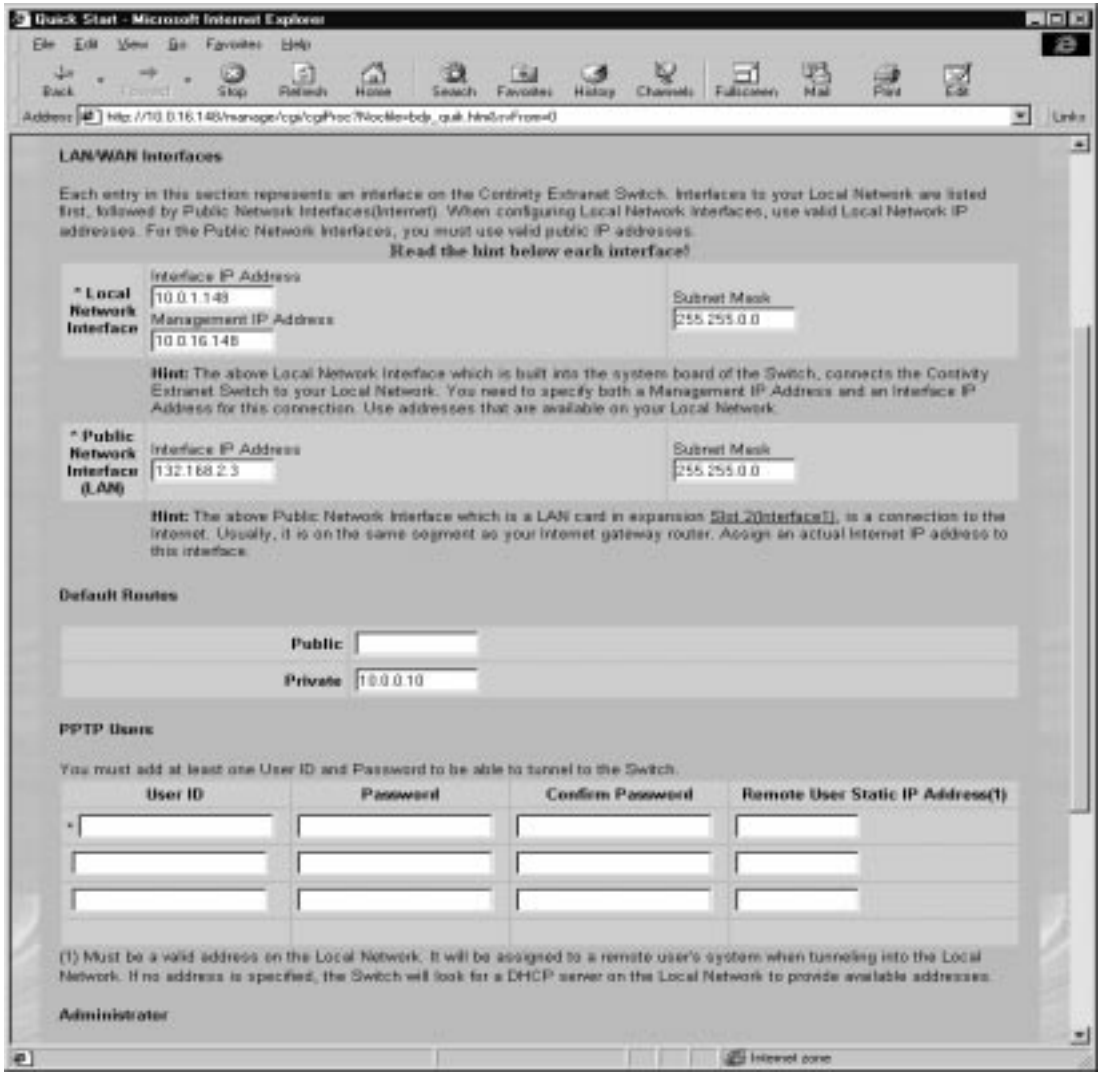

Quick Start - Microsoft Internet Explorer
LAN/WAN Interfaces
Each entry in this section represents an interface on the Contivity Extranet Switch. Interfaces to your Local Network are listed first, followed by Public Network Interfaces(Internet). When configuring Local Network interfaces, use valid Local Network IP addresses. For the Public Network Interfaces, you must use valid public IP addresses.
Read the hint below each interface!
* Local Network Interface
Interface IP Address
10.0.1.148
Subnet Mask
255.255.0.0
Management IP Address
10.0.16.148
Hint: The above Local Network Interface which is built into the system board of the Switch, connects the Contivity Extranet Switch to your Local Network. You need to specify both a Management IP Address and an Interface IP Address for this connection. Use addresses that are available on your Local Network.
* Public Network Interface (LAN)
Interface IP Address
132.168.2.3
Subnet Mask
255.255.0.0
Hint: The above Public Network Interface which is a LAN card in expansion Slot 2(Interface1), is a connection to the Internet. Usually, it is on the same segment as your Internet gateway router. Assign an actual Internet IP address to this interface.
Default Routes
Public
Private
10.0.0.10
PPTP Users
You must add at least one User ID and Password to be able to tunnel to the Switch.
User ID
Password
Confirm Password
Remote User Static IP Address(1)
(1) Must be a valid address on the Local Network. It will be assigned to a remote user's system when tunneling into the Local Network. If no address is specified, the Switch will look for a DHCP server on the Local Network to provide available addresses.
Administrator

Figure 4-3. Quick Start Configuration Display

LAN/WAN Interfaces

Interfaces

Lists the Management IP Address, LAN port, and any LAN or WAN cards that you have installed in the Switch.

IP Address

Enter an IP address for each interface on the Switch, including the LAN port. These IP addresses are used for tunnel creation. The IP Address consists of 32 bits, which are written as four octets in dotted-decimal format. For example:

```
192.168.34.21
```

Note that the interface IP Address configuration information is required, not the Management IP Address, which you already configured through the initial IP Address configuration.

Subnet Mask

The Subnet Mask defines how many bits of the IP Address represent the network the device is on and how many bits represent the host's ID on the network.

The device uses the Subnet Mask to determine which IP Addresses are directly reachable on the network and which must be routed through a gateway. A sample IP Address is 10.2.3.3 with a Subnet Mask of 255.255.0.0. This indicates that all hosts with addresses 10.2.*n.n* are directly reachable.

Default Gateway

The Default Gateway is where packets are routed onto the private or public network if there is not a specific route in the routing table to the desired location. Enter a Default Gateway to LAN or WAN Interface cards, as necessary.

Type

Public

Indicates that this interface is attached to a Public data network like the Internet. On a Public interface, the Switch rejects nontunneled protocols and only accepts tunneled protocols like IPsec, PPTP, L2TP, and L2F, and the diagnostic protocol PING.

A host can send only enough packets to a Public interface to establish a tunnel connection. If the tunnel is not established before the preset maximum-number-of-packets-allowed counter is reached, then the packets from that host are discarded.

Private

Indicates that this interface is attached to the Private network and it can accept nontunneled networking protocols such as TCP/IP, FTP, HTTP, etc. The Private interface also accepts tunneled protocols (e.g., IPsec, PPTP, L2TP, and L2F) that can be used for secure management access to the Switch.

PPTP Users

User ID

Enter a User ID. The User ID works along with the password as the authentication mechanism when attempting to access your local LAN through the Switch.

Password

Enter a user Password. You should use a minimum of eight characters, including upper and lowercase letters and numbers. Avoid using common names and words found in the dictionary. For example, a password constructed as “AxSessPw4U” is much better than “dog” or “Barney.”

NOTE: Do not use a password of 16 pound signs (#).

Confirm Password

Reenter the assigned password to verify that you have typed the intended password correctly.

Remote User Static IP Address

Enter an IP Address to be assigned to this user when establishing a PPTP tunnel session. Note that this IP Address is unnecessary if you assign user IP addresses from either a DHCP server or an internal address pool.

Administrator

The Administrator Settings allow you to change the Primary Administrator User ID (UID) and Password. The Primary Administrator User ID and Password combination always has access to all displays and controls. This UID is also used to access the serial port and the recovery disk.

This Administrator's Password is also the Primary Administrator's Password. This password guarantees access to the Switch via the serial port or a Web browser. Note that there can be only one Primary Administrator.

User ID

Enter an appropriate User ID for the Primary Administrator. This UID has the privileges to modify and view all controls in the Switch.

Password

Enter a user Password for the Primary Administrator.

NOTE: Do not use a password of 16 pound signs (#).

Confirm Password

Reenter the assigned password for the Primary Administrator to verify that you have typed the intended password correctly.

Date and Time

Date

Enter the current month, day, and year (mm/dd/yyyy).

Time

Enter the current hour, minute, and seconds (hh:mm:ss) as displayed by a 24-hour clock (00:00:00 to 23:59:59).

Time Zone

Select the appropriate time zone. Time zones can be a critical factor in the usage of digital certificates.

Automatic Backup

The Automatic Backup display under the Manage configuration option allows you to configure regular intervals when your system files are saved to designated host backup file servers.

IMPORTANT: You should configure Automatic Backups immediately so that you will not lose system or configuration information in case of problems. You configure the Automatic Backup servers from the Admin→Automatic Backup display.

Chapter 5
Extranet Access Client Installation

Windows 95

To install the Nortel Networks Extranet Access Client onto a Windows 95 PC, copy and load the four files that are on the Nortel Networks Extranet CD in the Client folder onto your hard drive. International software users must go to the Microsoft Web site (*http://support.microsoftcom/support*) to get the MSDUN13 patch.

1. First, install *Msdun13.exe* (Microsoft Dial-up Networking update) by double-clicking on the file name. The installation is self-explanatory. You might need your Windows 95 CD (if the CD was not copied onto your drive). During the installation you will be asked to reboot your system *twice*.
2. Next, install *Wsockupd.exe* (Winsock update) if you are using the retail version of Windows 95. Reboot your system after installing the update. You now have the Microsoft PPTP tunneling client installed.
3. Complete the IPsec installation by running the *Eac_25d.exe* (Nortel Networks Extranet Access Client). The installation is self explanatory. You might need your Windows 95 CD-ROM (if the CD was not copied onto your drive). When prompted at the end of the installation, reboot your system.
4. If you do not care about operating within the Network Neighborhood, skip this step. To operate within the Network Neighborhood, enable the following items under the Network Control Panel (click the Start menu button, select Settings → Control Panel, then double-click on the Network icon to open the Network Control Panel).

a. Under the box titled, “The following network components are installed,” verify that the Client for Microsoft Networks is listed. If it is not, click on ADD, then select CLIENT, then click ADD again. Select Microsoft followed by Client for Microsoft Networks and finally the OK button. You will need your Windows 95 CD if it is not already copied onto your system.

b. Under the same box titled, “The following network components are installed,” make sure that NetBEUI is not installed. To verify this, scroll down through the list box and look for any lines that have NetBEUI in them. If there are any lines that include NetBEUI, click on the line, and then click on the Remove button. This forces the Network Neighborhood to use NetBIOS over TCP/IP, which is compatible with the Extranet Switch.

c. Under the Identity tab, configure the Workgroup to be the same as your company’s internal workgroup. For example, “Nortelnetworks.”

d. Next under the Identity tab, verify that the Computer Name is different from your PC at work. Otherwise, you would be attempting to log a second unit with the same name onto the network.

e. If you have made any changes in the Network Control Panel, click OK, and then reboot the system.

f. Double-click on the Extranet Connection Manager icon.

g. Enter a new Connection Profile Name.

h. Create a new Dial-up Connection.

i. Click the Tool button (next to the Dial-up Connection list box), select New, and follow the wizard.

j. Create a new Extranet Connection.

k. Click the Tool button (next to the Extranet Connection list box), select New IPsec Connection, and follow the wizard.

l. Click the Connect button.

Windows 98 and Windows NT 4.0

To install the Nortel Networks Extranet Access Client onto a Windows 98 PC or Windows NT 4.0 workstation, you must copy the Extranet Access Client (*Eac_25d.exe*) that is on the Contivity Extranet Switch CD in the Client folder onto your hard drive.

1. Install *Eac_25d.exe* by double-clicking on the program name. The installation is self explanatory. As prompted at the end of the installation, reboot your system.
2. If using the Extranet Access Client over a dial-up connection:
    - Windows 98: Under the Network Control Panel (from the Start menu, select Settings → Control Panel), select Add → Adaptor → Microsoft → Dial-up Adaptor.
    - Windows NT: Install the Remote Access Service under the Network Control Panel (from the Start menu, select Settings → Control Panel, then double-click on the Network icon to open the Network Control Panel). Select the Services tab and click on Add. Scroll down to select "Remote Access Service" and click OK.
3. Under the Protocols tab for Windows NT or under the Network Control Panel for Windows 98, verify that NetBEUI is not installed. If NetBEUI is listed, click on it, then click on the Remove button. This will force the Network Neighborhood to use NetBIOS over TCP/IP, which is compatible with the Switch. Click the OK button and reboot your system.
4. Double-click on the Extranet Connection Manager icon.
    a. Enter a new Connection Profile Name.
    b. Create a new Dial-up Connection.
    c. Click the Tool button (next to the Dial-up Connection list box), select New, and follow the wizard.
    d. Create a new Extranet Connection.
    e. Click the Tool button (next to the Extranet Connection list box), select New IPsec Connection, and follow the wizard.
    f. Click the Connect button.

Chapter 6
Rack Mounting

This chapter describes how to mount your Switch into a chassis rack. Following are standard rack-mounting considerations that Nortel Networks recommends:

- The maximum recommended ambient temperature is 40 degrees Centigrade. Make sure the internal temperature of the rack also does not exceed 40 degrees.
- Do not block the power supply vents or otherwise restrict airflow when installing the Switch into a rack.
- Stabilize your rack properly so that it does not tip over under the weight of the Switch and other devices.
- Make sure that the electrical branch circuits are capable of handling the Switch *and* other units in the rack before installing and turning on the Switch.
- Maintain a reliable Earthing path in the rack system. The Switch is intended to connect to an Earth ground.

Warning: The Contivity Extranet Switch 4500 weighs about 60 pounds and should always be carried by two people.

Mounting Brackets

Figure 6-1 shows mounting brackets being attached to a Switch in preparation of a rack-mount installation. Position the brackets with the rack-mount bracket facing outward (as shown below).

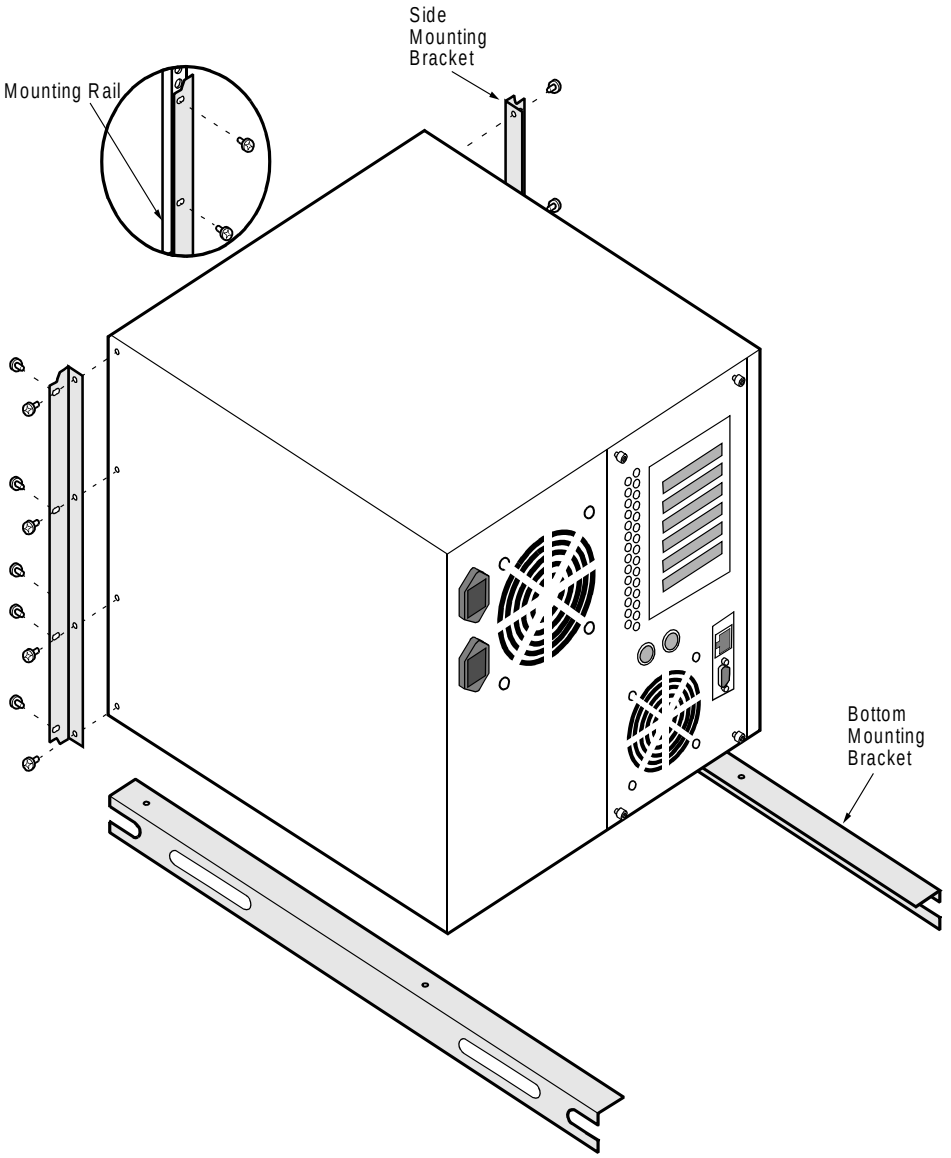


Figure 6-1. Bracket Installation for a Chassis Rack Mount

Rack-Mount Installation Procedure

You must have two people available when installing the rack-mount brackets. Use the rack-mounting hardware that came with your Switch to complete the following steps:

1. Install the long horizontal brackets onto the rack.
2. Install the vertical rack brackets onto the unit.
3. Slide the unit into the rack on top of the horizontal brackets.
4. Secure the unit's vertical rack-mount brackets to the vertical rack rails.

Chapter 7
Changing Hardware Configurations

This chapter describes how Nortel Networks trained service personnel can change existing hardware configurations, including:

- Installing LAN and WAN cards or adding memory
- Swapping out a power supply or hard disk drive

Warning: Only Nortel Networks trained service personnel should change existing hardware configurations. *Improper handling of internal components or assemblies, with the power connected, could cause severe injury.*

NOTE: Wear an antistaticband when handling electronic components for the Switch to avoid damaging them.

Warning: Turn off the Switch and unplug both power cords before installing LAN and WAN cards or system memory.

System Board

Figure 7-1 shows the Switch system board, including the DIMMs and option cards slots.

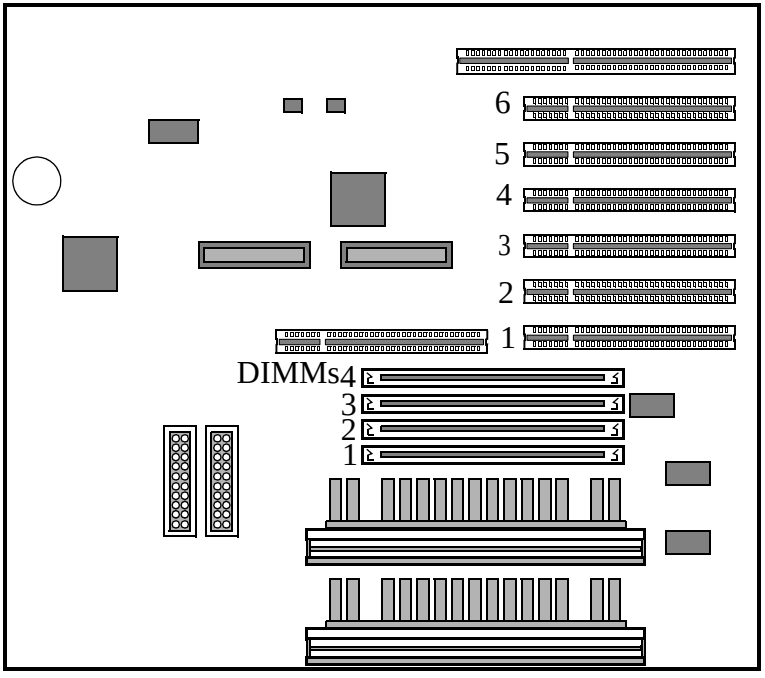


Figure 7-1. Switch's System Board

Warning: Personal injury could result if you incorrectly replace the battery. *This should be done by Nortel Networks trained service personnel only.* Replace with the same or an equivalent battery only, as recommended by the manufacturer. Also, dispose of used batteries according to the manufacturer's instructions.

NOTE: In spite of the above warning, which is mandated for regulatory approval, y*ou should not change the battery.* If you suspect a dead battery, contact Nortel Networks Customer Support.

Installing Option Cards

The following illustration shows you how install LAN or WAN option cards into the Switch. You can use Slots 1 to 6 for any mix of LAN and WAN cards; however, *you must populate the slots from Slot 1 to Slot 6, in that order.*

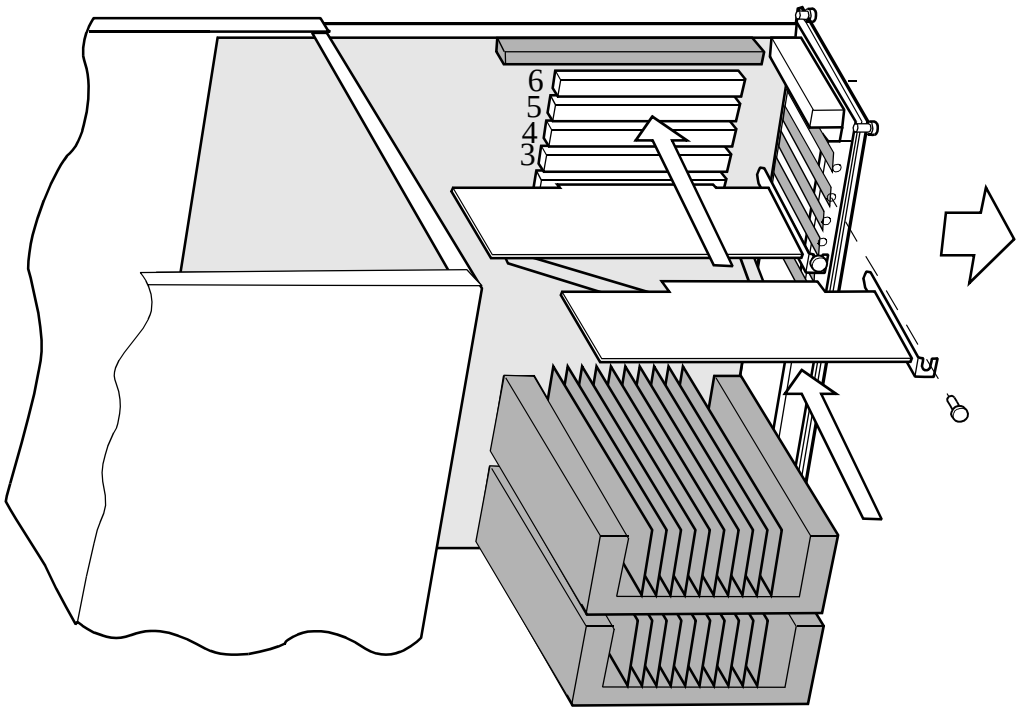


Figure 7-2. Installing LAN or WAN Cards

CAUTION: Be careful when inserting option cards, as the slide-out tray is not fully supported once pulled out. You should support the back of the tray with your hand while inserting an option card.

The following procedure is for Nortel Networks trained service personnel only.

1. Turn off the Switch and unplug it from its power source.
2. Unscrew the four screws securing the slide-out tray.
3. Pull out the tray by gripping it with the screws.
4. Remove the filler panel screw and pull out the slot filler panel.
5. Slide the option card into the intended slot. Make sure the card seats firmly and evenly into the card slot. If the card is not seated properly, it will not work. Populate the slots from Slot 1 to Slot 6, in that order.
6. Secure the option card into the tray with the slot filler panel screw.
7. Reverse Steps 3, 2, and 1, in that order.

Installing Additional DIMMs

The following illustration shows you how to unlock a Dual Inline Memory Module (DIMM), and remove or install it. Install a DIMM in the next available slot (i.e., if the DIMM # 1 slot is populated, then add the next DIMM to the DIMM # 2 slot).

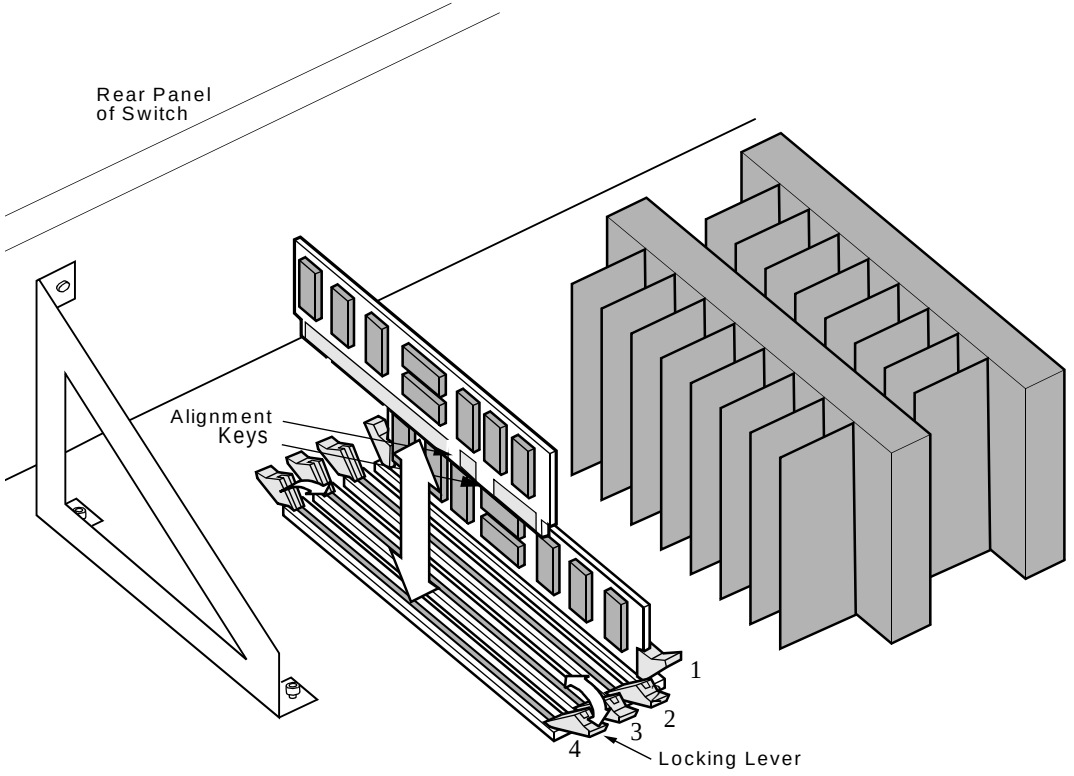


Figure 7-3. Installing Additional Memory

Follow these steps to install a DIMM into the Switch.

1. Remove the stabilization bracket by loosening the two secured captive screws and the rear Phillips screw.
2. Turn off the Switch.
3. Remove the power cords.
4. Unscrew the sliding tray at the back of the unit and pull it out using the thumb screws.
5. Press down the locking levers on both sides of the DIMM.
6. Pull the DIMM up to remove it from the slot.
7. Place a new DIMM in the next available slot, making sure to properly position the DIMM's alignment keys.
8. Pull up the locking levers on both sides of the DIMM, and snap the DIMM into its socket.

Memory Options

The Switch ships with 128 Mbits of memory installed. To increase the memory, contact your Nortel Networks sales representative.

Removing the Front Bezel

The following illustration shows you how to remove the front bezel from the Switch. You do not need to turn off the Switch to remove the front bezel when installing a power supply or hard disk drive.

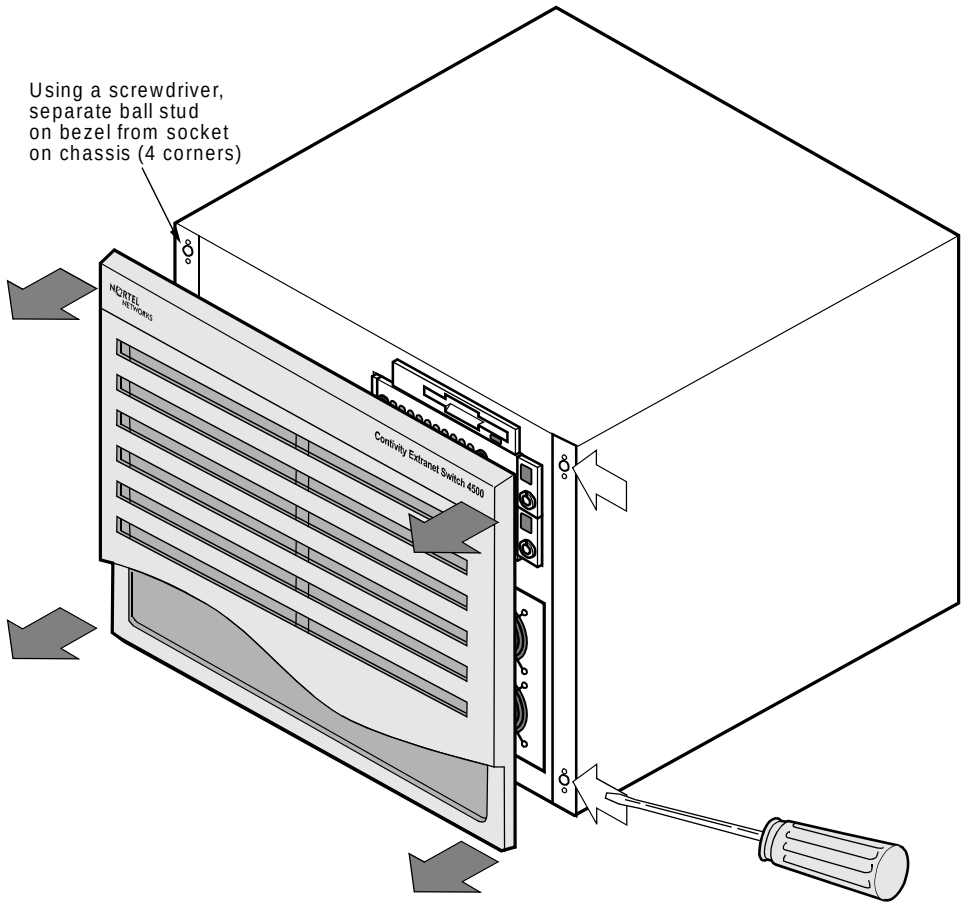


Figure 7-4. Front Bezel Removal

Remove the front bezel to:

- Replace a power supply.
- Replace a hard disk drive.
- Insert the recovery diskette.

The first few times you remove the front bezel it might seem to resist removal. This is simply because the pins and snaps are new. After a few times, removal is easier. Remove the Switch front bezel as follows:

1. Insert a flat-head screwdriver into the slots on the lower left and right side of the chassis, and pry the bezel forward.
2. Slide your fingers between the front bezel and the Switch.
3. Pull the bezel forward firmly.

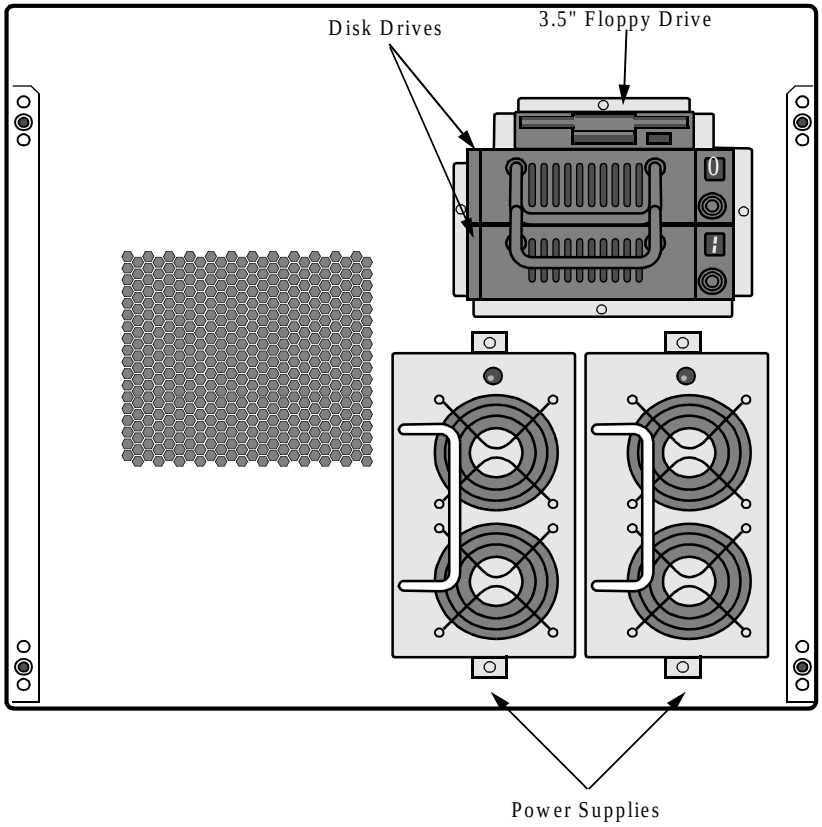


Figure 7-5. 4500 Front Components

Replacing a Power Supply

The following illustration shows you how to replace a hot-swappable power supply for the Switch.

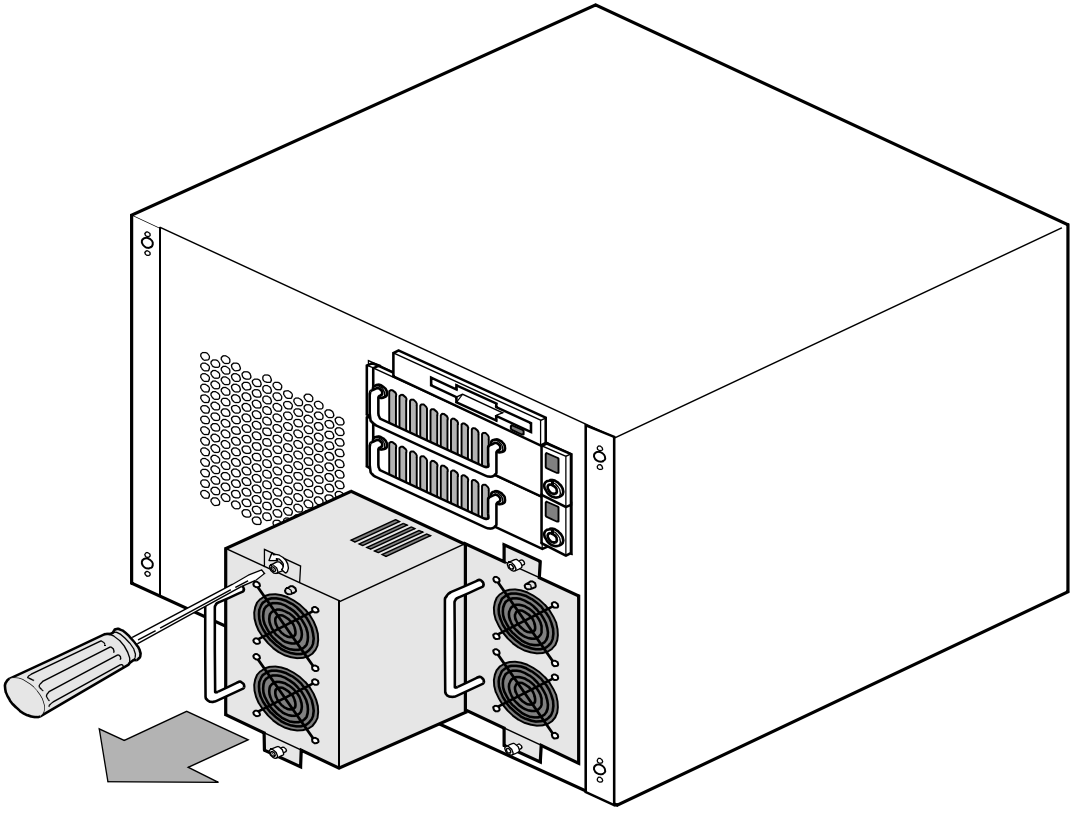


Figure 7-6. Removing the Power Supply

Remove the Switch front bezel (refer to page 7-7), then follow these steps:

1. Use a flat-head screwdriver to unscrew the top and bottom power supply screws.
2. Grab the handle and pull the power supply firmly, until the device disengages. Be careful of the sharp sheet-metal edges.
3. Insert the new power supply. Make sure the power supply seats firmly into its socket and is locked in.
4. Secure the power supply screws tightly with a screwdriver.
5. Replace the front bezel.

Installing a Hard Disk Drive

The following illustration shows you how to replace a hard disk drive for the Switch. *Hard disks are not hot-swappable*. When warm-swapping a disk drive, you must also perform the software steps cited below.

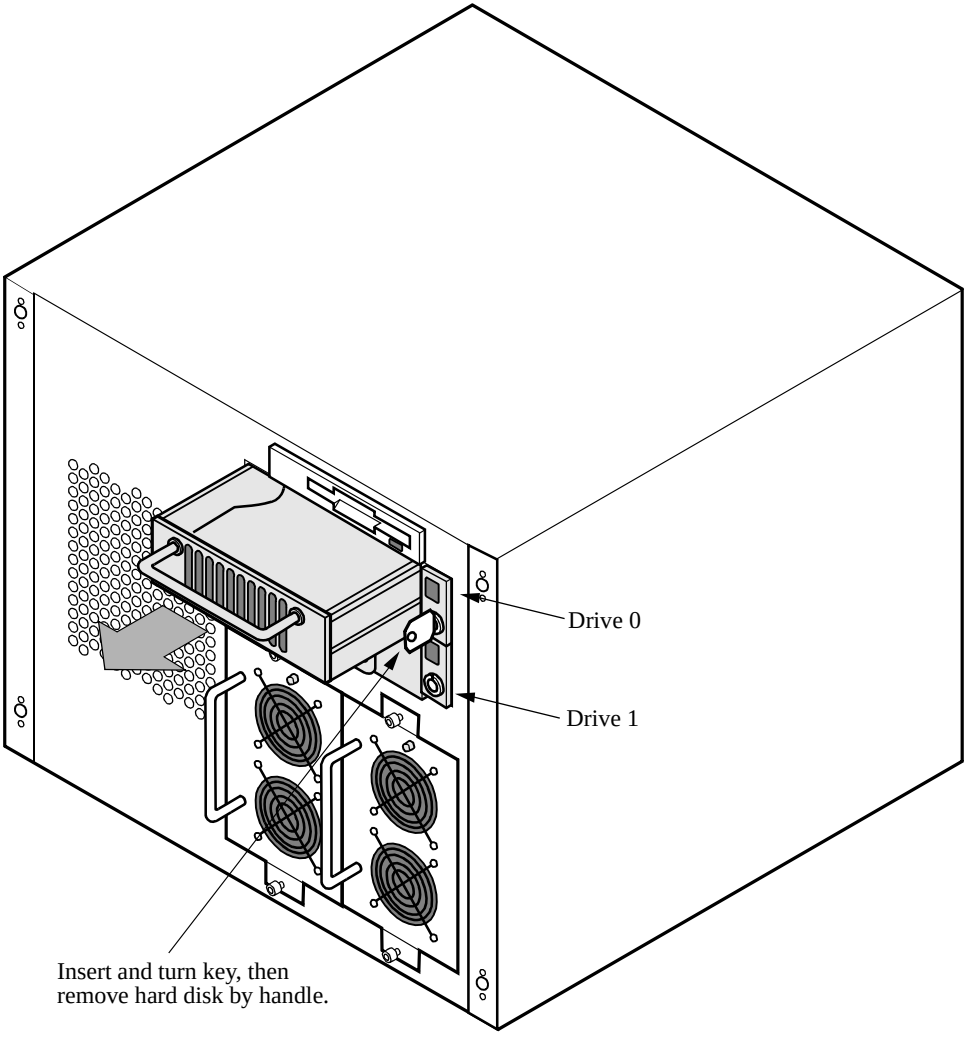


Figure 7-7. Removing the Hard Disk Drive

Software

1. Launch a Web browser to the Switch, and go to the Admin → File System display.
2. Click the button “Prepare selected device for removal.”

   This action saves any data that has not yet been saved to the hard disk from the disk cache.

Hardware

Remove the Switch front bezel (refer to page 7-7), then follow these steps:

1. Insert and turn the hard disk drive key to the right. The LED becomes a “U” for unlocked.

NOTE: Turning the key shuts off the power to the hard disk drive.

2. Pull the handle to remove the hard disk drive.
3. Insert the replacement hard drive fully, and lock it by turning the key to the left. Make sure the hard disk drive LED shows the proper drive number.
4. Replace the front bezel.
5. Reload the software on the disk. Refer to the “Admin → Recovery” section in the guide *Managing the Contivity Extranet Switch.*

Software

1. Launch a Web browser to the Switch, and go to the Admin → File System display.
2. Click on the drive and click the “Enable” button.

Appendix A
Specifications

Physical Specifications and Operating Environment

Specification	Description
Physical	
Depth	17 in (43.2 cm)
Width	14 in (35.6 cm)
Weight	60 lb (27.2 kg)
Electrical	
Voltage	100 - 240 V~
Current	3.0 A
Frequency	50/60 HZ
Operating Environment	
Temperature	0 - 40 degrees C
Relative Humidity	
Operating	10 - 90% noncondensing

Appendix B
Special Notices

This appendix provides information on statements of conditions, the Nortel Networks Software License Agreement, and RADIUS attribution.

Statement of Conditions

In the interest of improving internal design, operational function, and/or reliability, Nortel Networks, Inc. reserves the right to make changes to the products described in this document without notice.

Nortel Networks, Inc. does not assume any liability that may occur due to the use or application of the product(s) or circuit layout(s) described herein.

Portions of the code in this software product may be Copyright © 1988, Regents of the University of California. All rights reserved. Redistribution and use in source and binary forms of such portions are permitted, provided that the above copyright notice and this paragraph are duplicated in all such forms and that any documentation, advertising materials, and other materials related to such distribution and use acknowledge that such portions of the software were developed by the University of California, Berkeley. The name of the University may not be used to endorse or promote products derived from such portions of the software without specific prior written permission.

SUCH PORTIONS OF THE SOFTWARE ARE PROVIDED “AS IS” AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

In addition, the program and information contained herein are licensed only pursuant to a license agreement that contains restrictions on use and disclosure (that may incorporate by reference certain limitations and notices imposed by third parties).

Federal Communications Commission (FCC) Compliance Notice: Radio Frequency Notice

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy. If it is not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users will be required to take whatever measures may be necessary to correct the interference at their own expense.

EN 55 022 Statement

This is to certify that the Nortel Networks Contivity Extranet Switch 4500 is shielded against the generation of radio interference in accordance with the application of Council Directive 89/336/EEC, Article 4a. Conformity is declared by the application of EN 55 022 Class A (CISPR 22).

Warning: This is a Class A product. In a domestic environment, this product may cause radio interference, in which case, the user may be required to take appropriate measures.

EC Declaration of Conformity

This product conforms (or these products conform) to the provisions of Council Directive 89/336/EEC and 73/23/EEC. The Declaration of Conformity is available on the Nortel Networks World Wide Web site at www.nortelnetworks.com.

Voluntary Control Council for Interference (VCCI) Statement

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

Canadian Department of Communications Radio Interference Regulations

This digital apparatus, the Contivity Extranet Switch 4500, does not exceed the Class A limits for radio-noise emissions from digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

Règlement sur le brouillage radioélectrique du ministère des Communications

Cet appareil numérique, le Contivity Extranet Switch 4500, respecte les limites de bruits radioélectriques visant les appareils numériques de classe A prescrites dans le Règlement sur le brouillage radioélectrique du ministère des Communications du Canada.

Nortel Networks NA, Inc. Software License Agreement

NOTICE: Please carefully read this license agreement before copying or using the accompanying software or installing the hardware unit with pre-enabled software (each of which is referred to as "Software" in this Agreement). BY COPYING OR USING THE SOFTWARE, YOU ACCEPT ALL OF THE TERMS AND CONDITIONS OF THIS LICENSE AGREEMENT. THE TERMS EXPRESSED IN THIS AGREEMENT ARE THE ONLY TERMS UNDER WHICH NORTEL NETWORKS WILL PERMIT YOU TO USE THE SOFTWARE. If you do not accept these terms and conditions, return the product, unused and in the original shipping container, within 30 days of purchase to obtain a credit for the full purchase price.

1. License Grant. Nortel Networks, Inc. ("Nortel Networks") grants the end user of the Software ("Licensee") a personal, nonexclusive, nontransferable license: a) to use the Software either on a single computer or, if applicable, on a single authorized device identified by host ID, for which it was originally acquired; b) to copy the Software solely for backup purposes in support of authorized use of the Software; and c) to use and copy the associated user manual solely in support of authorized use of the Software by Licensee. This license applies to the Software only and does not extend to Nortel Networks Agent software or other Nortel Networks software products. Nortel Networks Agent software or other Nortel Networks software products are licensed for use under the terms of the applicable Nortel Networks, Inc. Software License Agreement that accompanies such software and upon payment by the end user of the applicable license fees for such software.

2. Restrictions on use; reservation of rights. The Software and user manuals are protected under copyright laws. Nortel Networks and/or its licensors retain all title and ownership in both the Software and user manuals, including any revisions made by Nortel Networks or its licensors. The copyright notice must be reproduced and included with any copy of any portion of the Software or user manuals. Licensee may not modify, translate, decompile, disassemble, use for any competitive analysis, reverse engineer, distribute, or create derivative works from the Software or user manuals or any copy, in whole or in part. Except as expressly provided in this Agreement, Licensee may not copy or transfer the Software or user manuals, in whole or in part. The Software and user manuals embody Nortel Networks' and its licensors' confidential and proprietary intellectual property. Licensee shall not sublicense, assign, or otherwise disclose to any third party the Software, or any information about the operation, design, performance, or implementation of the Software and user manuals that is confidential to Nortel Networks and its licensors; however, Licensee may grant permission to its consultants, subcontractors, and agents to use the Software at Licensee's facility, provided they have agreed to use the Software only in accordance with the terms of this license.

3. Limited warranty. Nortel Networks warrants each item of Software, as delivered by Nortel Networks and properly installed and operated on Nortel Networks hardware or other equipment it is originally licensed for, to function substantially as described in its accompanying user manual during its warranty period, which begins on the date Software is first shipped to Licensee. If any item of Software fails to so function during its warranty period, as the sole remedy Nortel Networks will at its discretion provide a suitable fix, patch, or workaround for the problem that may be included in a future Software release. Nortel Networks further warrants to Licensee that the media on which the Software is provided will be free from defects in materials and workmanship under normal use for a period of 90 days from the date Software is first shipped to Licensee. Nortel Networks will replace defective media at no charge if it is returned to Nortel Networks during the warranty period along with proof of the date of shipment. This warranty does not apply if the media has been damaged as a result of accident, misuse, or abuse. The Licensee assumes all responsibility for selection of the Software to achieve Licensee's intended results and for the installation, use, and results obtained from the Software. Nortel Networks does not warrant a) that the functions contained in the software will meet the Licensee's requirements, b) that the Software will operate in the hardware or software combinations that the Licensee may select, c) that the operation of the Software will be uninterrupted or error free, or d) that all defects in the operation of the Software will be corrected. Nortel Networks is not obligated to remedy any Software defect that cannot be reproduced with the latest Software release. These warranties do not apply to the Software if it has been (i) altered, except by Nortel Networks or in accordance with its instructions; (ii) used in conjunction with another vendor's product, resulting in the defect; or (iii) damaged by improper environment, abuse, misuse, accident, or negligence. THE FOREGOING WARRANTIES AND LIMITATIONS ARE EXCLUSIVE REMEDIES AND ARE IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Licensee is responsible for the security of its own data and information and for maintaining adequate procedures apart from the Software to reconstruct lost or altered files, data, or programs.

4. Limitation of liability. IN NO EVENT WILL Nortel NETWORKS OR ITS LICENSORS BE LIABLE FOR ANY COST OF SUBSTITUTE PROCUREMENT; SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES; OR ANY DAMAGES RESULTING FROM INACCURATE OR LOST DATA OR LOSS OF USE OR PROFITS ARISING OUT OF OR IN CONNECTION WITH THE PERFORMANCE OF THE SOFTWARE, EVEN IF Nortel NETWORKS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN NO EVENT SHALL THE LIABILITY OF Nortel NETWORKS RELATING TO THE SOFTWARE OR THIS AGREEMENT EXCEED THE PRICE PAID TO Nortel NETWORKS FOR THE SOFTWARE LICENSE.

5. Government Licensees. This provision applies to all Software and documentation acquired directly or indirectly by or on behalf of the United States Government. The Software and documentation are commercial products, licensed on the open market at market prices, and were developed entirely at private expense and without the use of any U.S. Government funds. The license to the U.S. Government is granted only with restricted rights, and use, duplication, or disclosure by the U.S. Government is subject to the restrictions set forth in subparagraph (c)(1) of the Commercial Computer Software—Restricted Rights clause of FAR 52.227-19 and the limitations set out in this license for civilian agencies, and subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause of DFARS 252.227-7013, for agencies of the Department of Defense or their successors, whichever is applicable.

6. Use of Software in the European Community. This provision applies to all Software acquired for use within the European Community. If Licensee uses the Software within a country in the European Community, the Software Directive enacted by the Council of European Communities Directive dated 14 May, 1991, will apply to the examination of the Software to facilitate interoperability. Licensee agrees to notify Nortel Networks of any such intended examination of the Software and may procure support and assistance from Nortel Networks.

7. Term and termination. This license is effective until terminated; however, all of the restrictions with respect to Nortel Networks' copyright in the Software and user manuals will cease being effective at the date of expiration of the Nortel Networks copyright; those restrictions relating to use and disclosure of Nortel Networks' confidential information shall continue in effect. Licensee may terminate this license at any time. The license will automatically terminate if Licensee fails to comply with any of the terms and conditions of the license. Upon termination for any reason, Licensee will immediately destroy or return to Nortel Networks the Software, user manuals, and all copies. Nortel Networks is not liable to Licensee for damages in any form solely by reason of the termination of this license.

8. Export and Re-export. Licensee agrees not to export, directly or indirectly, the Software or related technical data or information without first obtaining any required export licenses or other governmental approvals. Without limiting the foregoing, Licensee, on behalf of itself and its subsidiaries and affiliates, agrees that it will not, without first obtaining all export licenses and approvals required by the U.S. Government: (i) export, re-export, transfer, or divert any such Software or technical data, or any direct product thereof, to any country to which such exports or re-exports are restricted or embargoed under United States export control laws and regulations, or to any national or resident of such restricted or embargoed countries; or (ii) provide the Software or related technical data or information to any military end user or for any military end use, including the design, development, or production of any chemical, nuclear, or biological weapons.

9. General. If any provision of this Agreement is held to be invalid or unenforceable by a court of competent jurisdiction, the remainder of the provisions of this Agreement shall remain in full force and effect. This Agreement will be governed by the laws of the state of California.

Should you have any questions concerning this Agreement, contact Nortel Networks, Inc., 4401 Great America Parkway, P.O. Box 58185, Santa Clara, California 95054-8185.

LICENSEE ACKNOWLEDGES THAT LICENSEE HAS READ THIS AGREEMENT, UNDERSTANDS IT, AND AGREES TO BE BOUND BY ITS TERMS AND CONDITIONS. LICENSEE FURTHER AGREES THAT THIS AGREEMENT IS THE ENTIRE AND EXCLUSIVE AGREEMENT BETWEEN Nortel NETWORKS AND LICENSEE, WHICH SUPERSEDES ALL PRIOR ORAL AND WRITTEN AGREEMENTS AND COMMUNICATIONS BETWEEN THE PARTIES PERTAINING TO THE SUBJECT MATTER OF THIS AGREEMENT. NO DIFFERENT OR ADDITIONAL TERMS WILL BE ENFORCEABLE AGAINST Nortel NETWORKS UNLESS Nortel NETWORKS GIVES ITS EXPRESS WRITTEN CONSENT, INCLUDING AN EXPRESS WAIVER OF THE TERMS OF THIS AGREEMENT.

RADIUS (Remote Authentication Dial-In User Service)

Livingston Enterprises, Inc.

6920 Koll Center Parkway

Pleasanton, CA 94566

Copyright 1992 Livingston Enterprises, Inc.

Permission to use, copy, modify, and distribute this software for any purpose and without fee is hereby granted, provided that this copyright and permission notice appear on all copies and supporting documentation, the name of Livingston Enterprises, Inc. not be used in advertising or publicity pertaining to distribution of the program without specific prior permission, and notice be given in supporting documentation that copying and distribution is by permission of Livingston Enterprises, Inc.

Livingston Enterprises, Inc. makes no representations about the suitability of this software for any purpose. It is provided "as is" without express or implied warranty.

[C] The Regents of the University of Michigan and Merit Network, Inc.

1992, 1993, 1994, 1995, 1996 All Rights Reserved

Permission to use, copy, modify, and distribute this software and its documentation for any purpose and without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies of the software and derivative works or modified versions thereof, and that both the copyright notice and this permission and disclaimer notice appear in supporting documentation.

THIS SOFTWARE IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE REGENTS OF THE UNIVERSITY OF MICHIGAN AND MERIT NETWORK, INC. DO NOT WARRANT THAT THE FUNCTIONS CONTAINED IN THE SOFTWARE WILL MEET LICENSEE'S REQUIREMENTS OR THAT OPERATION WILL BE UNINTERRUPTED OR ERROR FREE.

The Regents of the University of Michigan and Merit Network, Inc. shall not be liable for any special, indirect, incidental or consequential damages with respect to any claim by Licensee or any third party arising from use of the software.

Index

Numerics

100BASE-TX
  interface 2-4
10BASE-T
  interface 2-4

A

administrator 4-9
administrator settings 4-13
antistatic 7-1
automatic backup 4-14

B

browser versions 4-1

C

Category 3, 4
  wiring requirements 2-4
Category 5
  wiring requirements 2-4
caution viii
components
  list 1-4
configuration choices 4-3
connecting
  cables 2-2
Contivity Extranet Switch
  description 1-1
conventions viii, ix
customer support xii

D

date 4-14
DB26S to T1 CSU/DSU
  pinouts 2-9
DB26S to V.35
  connector 2-5, 2-7, 2-9
  pinouts 2-5, 2-7
DB9 or DB25
  connectors 2-13
default gateway 3-2, 4-11
DHCP 4-8
DIMMs 7-2
  installing 7-5
diskette
  IP Address Configuration Utility 3-3
documentation map x
DSU/CSU
  required 2-6, 2-8

F

front bezel
  removing 7-7, 7-8

G

gateway IP address
  serial interface 3-7
Guided Configuration 4-5

H

hard drives 7-8
Hardware Accelerator Encryption Card 2-12

I

installation 6-2
interface
  IP address(es) 4-11
IP address 3-2, 4-9, 4-11
  configuration utility 3-5

J

Java 4-1

L

LAN cards 4-11
  installing 7-3
LDAP 4-8
LEDs
  system board 2-14
login
  default 4-6

M

Manage Extranet Switch 4-3, 4-5
memory, size 7-6

O

option cards slots 7-2

P

password
  default 4-6
power cords
  connecting 2-2
power supplies 7-8
  replacing 7-9
power-off sequence 2-18
power-on sequence 2-18
PPTP 4-8
product support xii
public interface 4-12
publications, Nortel Networks xi

Q

Quick Start 4-5
  requirements 4-7

R

rack-mount installation 6-3
recovery diskette drive 7-8
registration 4-3, 4-5
RJ-45
  pinouts 2-4

S

safety 7-1
  power off 7-3, 7-6
sequences
  power-off 2-18
  power-on 2-18
serial cable
  connectors 2-13
serial interface
  configuration requirements 3-6
  connector 2-13
software, latest
  registration 4-6
speed
  selection 2-4
subnet mask 4-9
support, Nortel Networks xii
system board 4-11
  illustration 7-2
system identity
  assigning 3-1
system IP address
  serial interface 3-7
system IP subnet mask
  serial interface 3-7

T

technical publications xi
technical support xii
technical tips
  registration 4-6

terminal emulation
communication requirements 3-6
serial interface 3-7
testing a configuration 4-9
text conventions ix
time 4-14

U

user ID 4-12
user interface ix

W

WAN cards 4-11
installing 7-3
WAN connection
DSU/CSU 2-6, 2-8
warning viii
Web browsers 3-5, 4-1
Welcome display 4-3